TEXTILE WORLD

JUNE 1961
PRICE $1.00

A McGRAW-HILL PUBLICATION

Coming at Last... Action on Imports

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What Industry Leaders Say
How Washington Reacts
How It Looks Overseas

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New Minimum Wage

How It Will Hit Your Mill
What You Can Do About It

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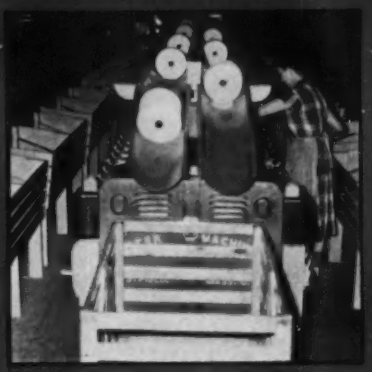

Winding Costs Trimmed 58%

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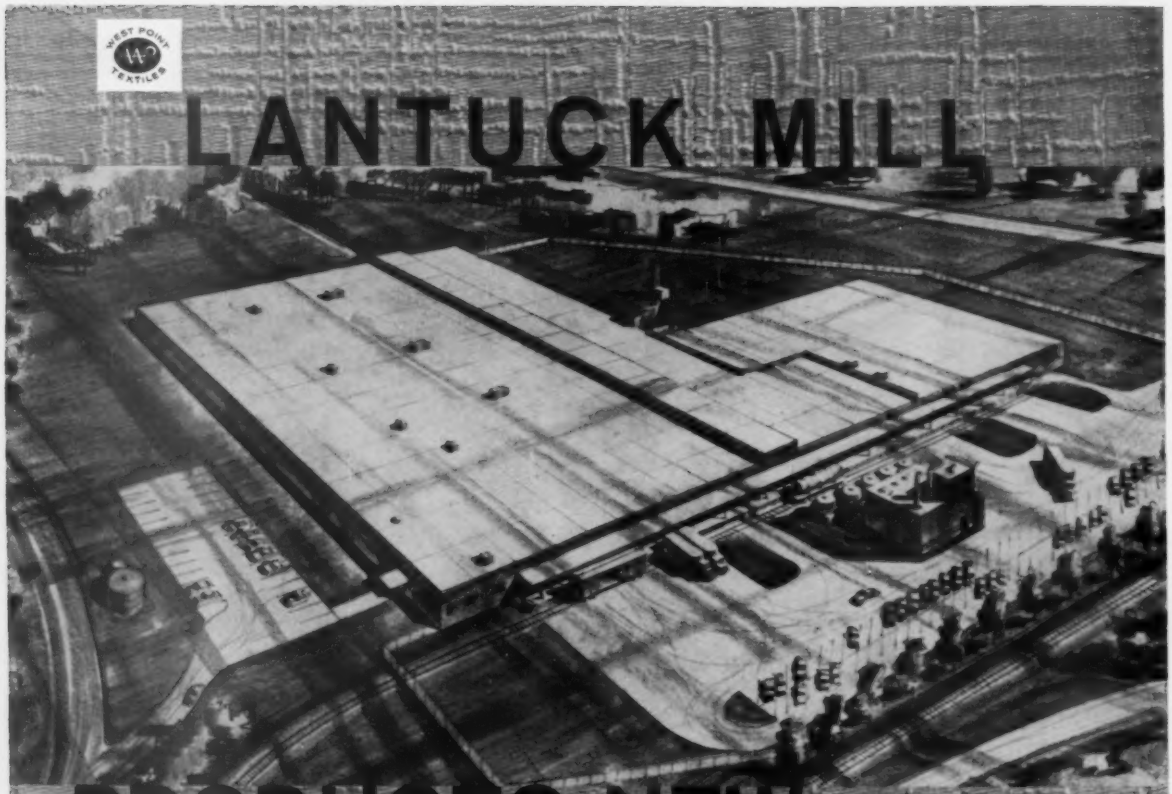

LANTUCK MILL

PRODUCES NEW, NON-WOVEN MATERIALS

West Point Manufacturing Company's new 200,000 square foot plant, now in operation at Fairfax, Alabama, was especially designed by Robert and Company Associates for the production of non-woven materials. The process which was developed by West Point in a pilot plant operation, produces non-woven materials for a wide variety of industrial and commercial uses including, Fabrique, a decorative wall covering.

In planning improvements, additions or plant relocation of your textile production facilities, take advantage of Robert and Company Associates' 42 years experience in working with these industry leaders:

ROBERT AND COMPANY ASSOCIATES
Textile Engineering Division
ATLANTA

Aberfoyle Manufacturing Co.
American Bemberg Corporation
Bachmann-Uxbridge Company
Bibb Manufacturing Company
Cabin Crafts, Inc.
The William Carter Company
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The Springs Cotton Mills
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Textiles-Incorporated
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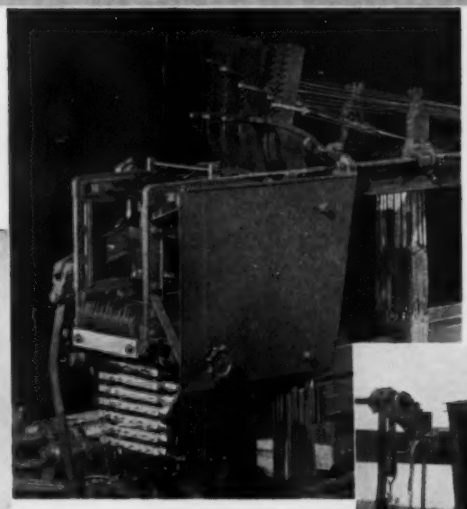
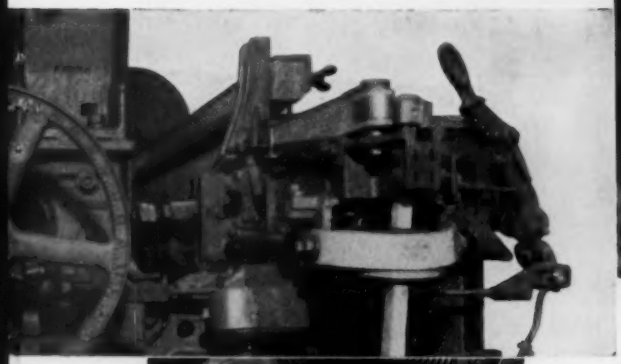
X-3

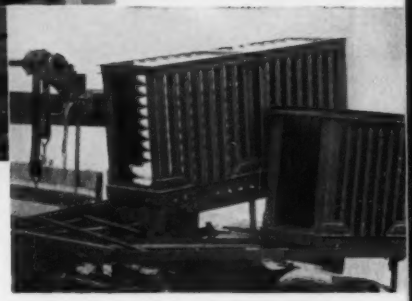
a new dimension in weaving



TOP MOTION
New strengthened Dobby
— 16 harnesses, 15/32 Gauge or
— 20 harnesses, 3/8 Gauge
Clock Spring up to 6 harnesses

ALUMINUM OR WOODEN LAY CONSTRUCTION





AUTOMATIC FILLING MAGAZINE

The X-3 Model Loom is designed to weave all of the fabrics normally woven on the X-2 and most synthetic fabrics commonly woven on the XD. This loom provides *greater versatility, increased speed, higher quality goods, and lower weave room costs.*

A weight increase of over 500 pounds in frame and shafting*, contributes to added stability, reduces vibration, and permits higher speeds regardless of fabric being woven.

**As compared with a Draper X-2 Model Loom*

LET - OFFS
Bartlett
Tru-Tension
Hunt

IMPROVED TAKE-UPS
to weave a complete range of Cotton and Synthetic fabrics.

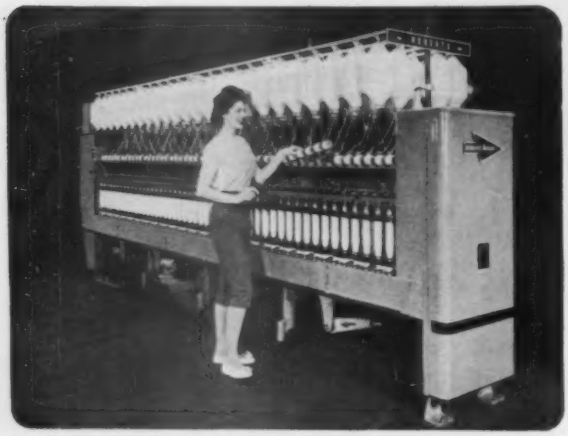
DRAPER CORPORATION

HOPEDALE, MASS. • ATLANTA, GA. • GREENSBORO, N. C. • SPARTANBURG, S. C.

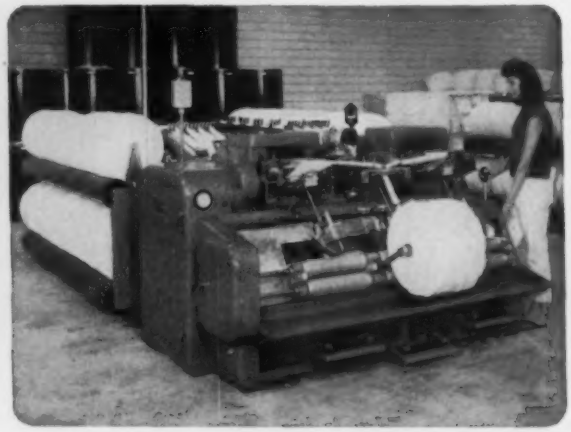
ROBERTS

YARN MAKING MACHINERY

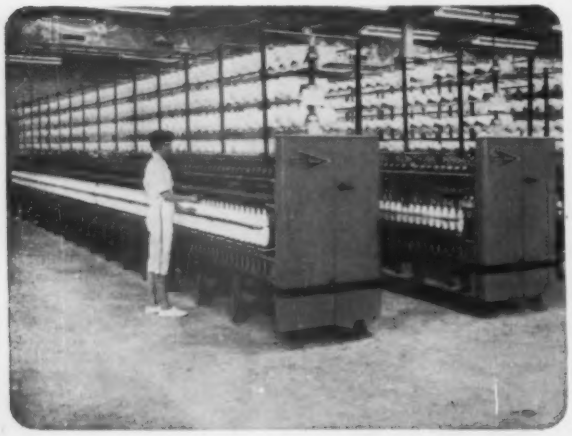
for Cotton, Worsted, or Long Fiber Systems



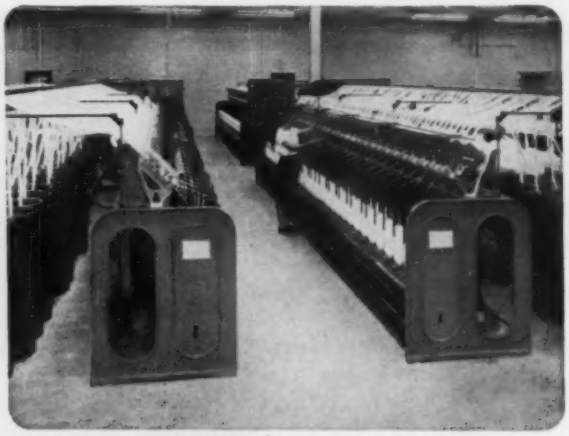
ROBERTS ARROW SPINNING for both cotton system and long fiber system yarn spinning for natural and synthetic fibers and blends. High speed, all ball bearing, big package Arrow Spinning Frames in 25-inch or 36-inch width. Exceptional flexibility and simplicity of operation in the manufacture of improved quality yarns at reduced costs and modest initial investment.



ROBERTS-TEMATEX worsted system preparatory machines, including ParaBlenders, ParaDrafters and AutoEveners, are rugged, high performance machines for pinning, parallelizing, drafting and blending worsted and synthetic fibers prior to roving and spinning, and in top making plants. AutoEvener automatically and instantaneously corrects delivered sliver weight to within plus or minus 1%.



ROBERTS TWISTERS for plying yarns are completely ball bearing equipped and designed for high speed ring twisting operations. 25- or 36-inch frames. Up to 3½-inch rings and 12-inch bobbins. Package weights 1¼ pounds on cotton, ¾ to 1 pound on worsted.

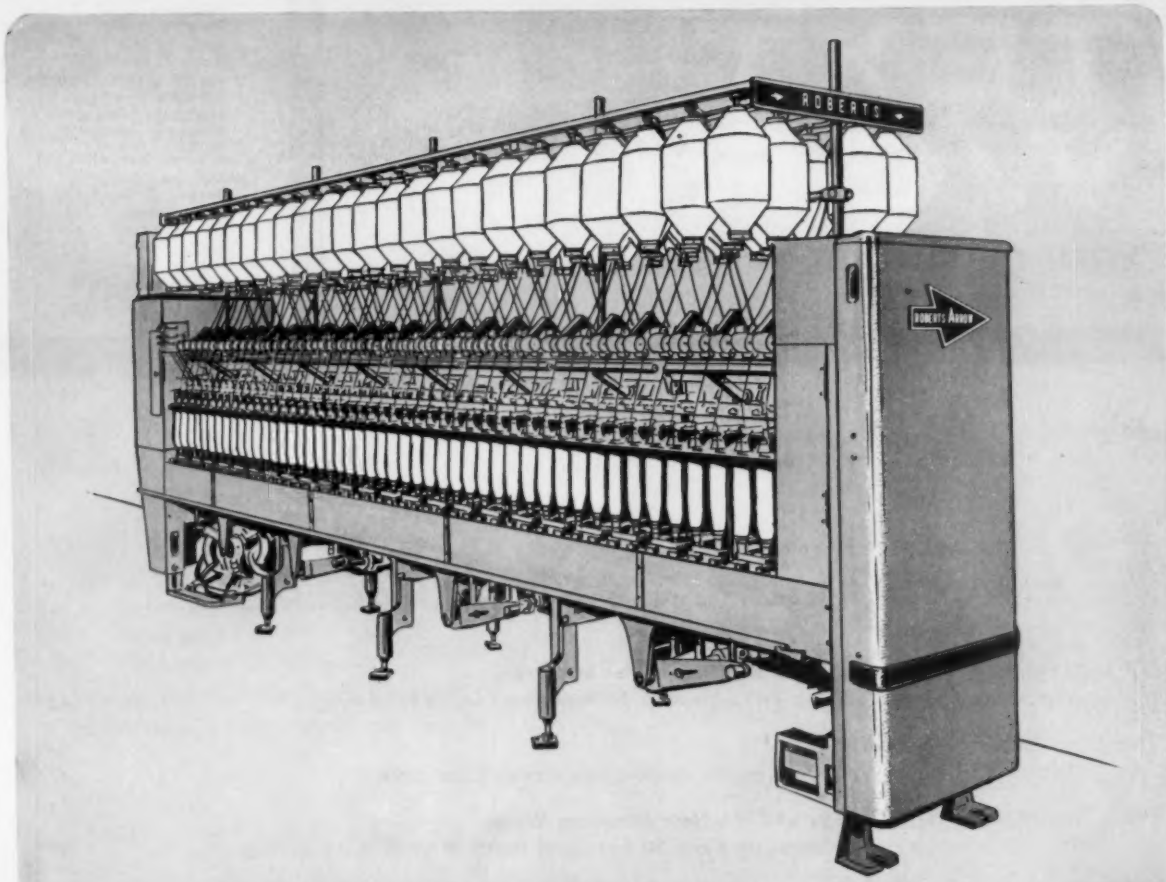


ROBERTS ROVING FRAMES are ball bearing rebuilt and feature all-new heavy duty ball bearing Roberts Double Apron Drafting Systems for cotton, short staple or long fiber synthetics, worsted and blends. 10x5 and 12x7 packages. Provisions for double headed spools.

Simplicity of design, rugged construction and high speed ball bearing operation are the trade marks of all Roberts Company machinery. Roberts also supplies rebuilt spinning frames and modernization change-overs for mills' existing machinery.

ROBERTS COMPANY

SANFORD, NORTH CAROLINA



ROBERTS ARROW

ADVANCED ENGINEERING DESIGN
ATTRACTIVE LOW PRICE
PRACTICAL MILL OPERATION

1200 NEW ROBERTS ARROW Spinning Frames with some 380,000 spindles have been installed in mills since their introduction four years ago; dramatic testimony that Arrow Spinning does the job to mill satisfaction!

RUGGED, ALL BALL BEARING and free of gadgetry and frills, new Arrow Spinning has been refined and streamlined, and engineered for peak performance and dependability. Many technological improvements have been incorporated.

HIGHEST YARN QUALITY! With new FC Drafting cotton system spinning, Arrow Frames consistently spin stronger, more even yarns. Proper fiber control, gripping and weight assure superior yarn quality.

INCREASED SPEEDS! Spindle speeds to 15,000 r.p.m., dynamic balancing of all components, and maximum use of ball bearings provide increased production and economy, with smooth and dependable performance.

WIDER VERSATILITY! Coarse or fine yarns from 2s to 120s count, cotton or synthetics and blends, and a broad range of drafts from 10 to 60 are successfully handled. New Arrow Spinning spins short or long staple cotton, and synthetics from 1⅛" to 3". Changes in fiber, yarn number, draft, twist and bobbin build are quickly accomplished.

REDUCED CLEANING, MAINTENANCE! Strictly functional, new Arrow Spinning has been engineered for trouble-free operation with reduced cleaning and maintenance. Simplification of components, and fewer parts provide quick, easy cleaning.

ROBERTS COMPANY
SANFORD, NORTH CAROLINA

CIRCLE 3 ON READER SERVICE CARD

TEXTILE WORLD

VOLUME 111, NO. 6 JUNE 1961

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Coming Next Month:

The First Real Inside Look at Shuttleless Looms

July TEXTILE WORLD will lift the veil of mystery surrounding shuttleless loom operations. For the first time anywhere, you'll get a complete breakdown on over-all costs, operating efficiencies, and equipment for the largest installation in one weaving room in the country. Also in July, you'll learn how one company hit the right combination to make its money go farthest in modernizing an old, discarded mill.

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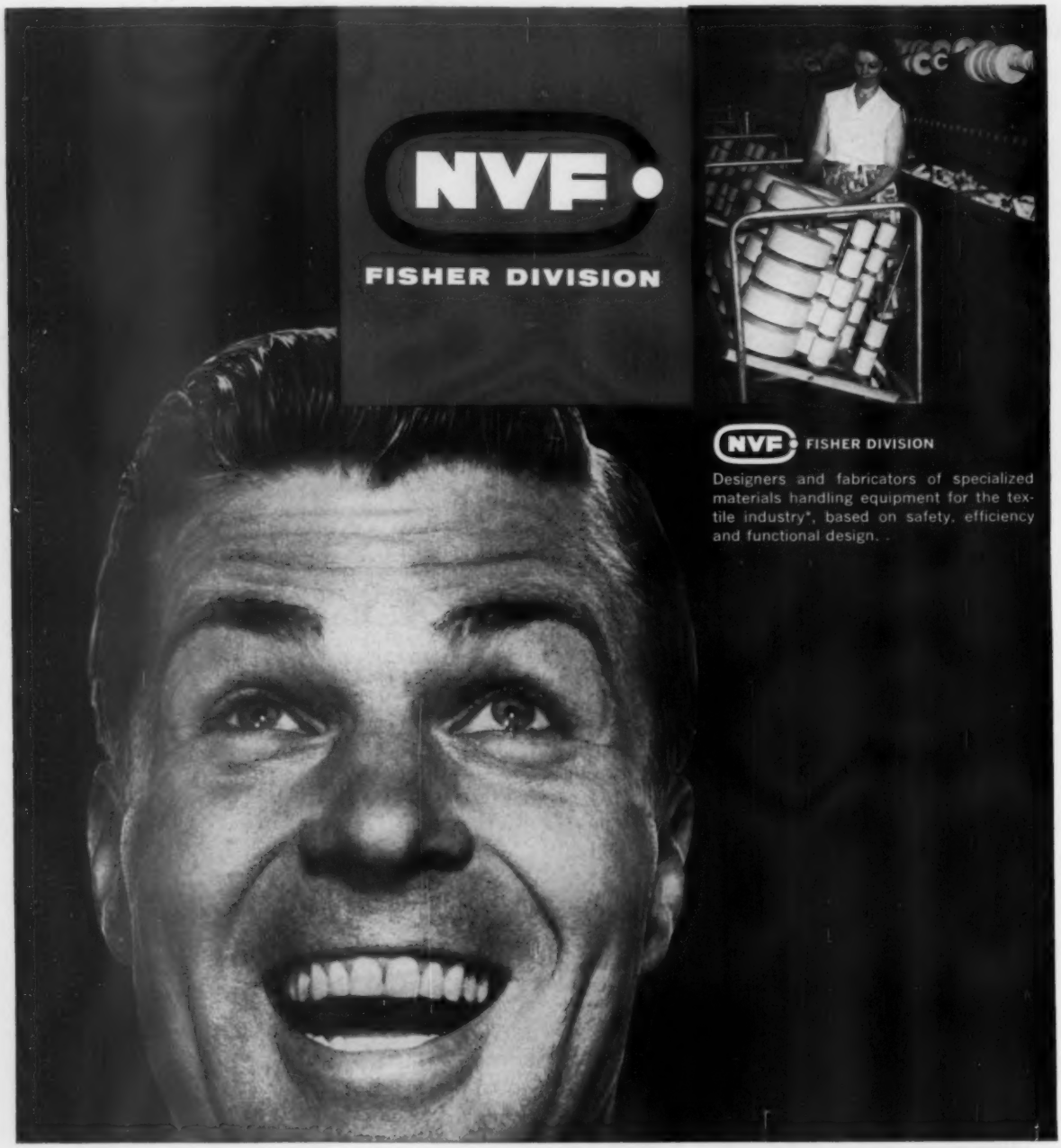
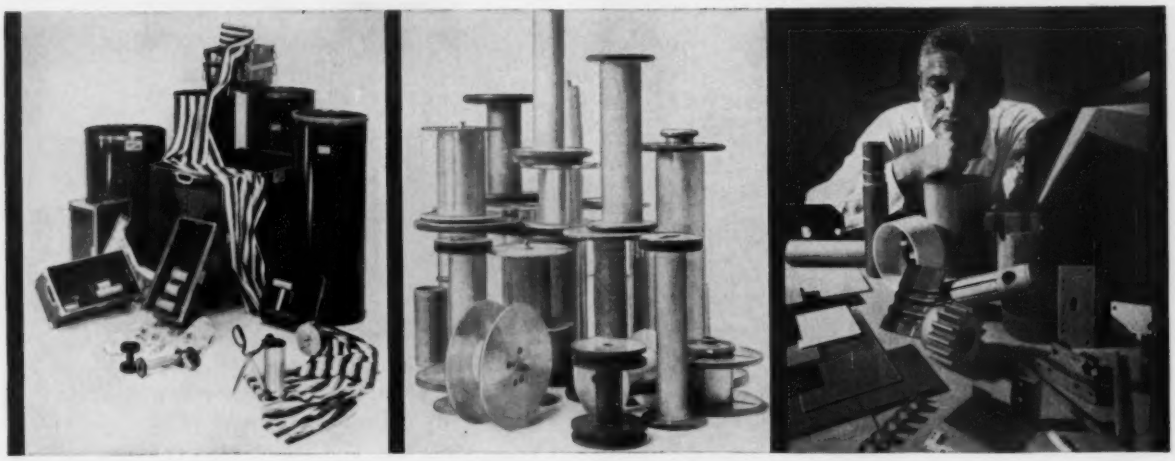
NVF announces broadened

Fisher Manufacturing Company—specialists in textile materials-handling


NVF
FISHER DIVISION
NVF FISHER DIVISION
Designers and fabricators of specialized materials handling equipment for the textile industry*, based on safety, efficiency and functional design.

service to the textile industry

equipment—becomes Fisher Division of National Vulcanized Fibre Company.



NVF KENNETT DIVISION

Roving cans, hand trucks, tote boxes, trays, baskets and barrels in a wide range of sizes, styles and combinations. Made of Vulcanized Fibre or other materials.

NVF LESTERSHIRE DIVISION

Spools and bobbins in a wide choice of designs and materials—aluminum, fibre, and combinations, including Lestershire's new brazed aluminum construction.

NVF BASIC MATERIALS DIVISION

Choice of 116 basic engineering plastics. For uses such as shuttle armor, spool heads, gears, cake discs, machine parts, binder pins, adjuster sticks, and tenter rails.

Meet the new broader line-up of NVF products and services now ready to dig deeply into your materials-handling problems . . . to come up with ideas that can mean substantial dollar savings and increased efficiency in your mill.

Fisher Division's products, skills, facilities, and specialized knowledge of mill materials-handling needs complements NVF's full line of standard and special Kennett trucks, trays, boxes, and roving cans. For example, NVF Fisher Warp-Doff Systems are standard in many mills, have a solid record of cost reduction. Specialized NVF Fisher equipment includes card can trucks, filling boxes, pin rack trucks, beam handlers, warp spool trucks, quill boxes and many others. In addition to its Vulcanized Fibre line of equipment, NVF now offers you a wide variety of constructions and a choice of materials that includes steel, stainless steel, fiberglas, and aluminum.

Add to this the NVF line of Lestershire Spools and Bobbins for synthetic and natural fibers, which are offered in a range of designs and construction materials.

NVF now serves you from ten strategically-located plants throughout the United States and Canada. Included is the modern Fisher Division manufacturing plant at Hartwell, Georgia, plus an expanded sales and service organization throughout the industry.

Invite a NVF Fisher, Kennett or Lestershire representative to discuss *your* mill requirements. As close to you as your phone, he is backed by a service, engineering and manufacturing organization that knows how to increase your materials-handling efficiency...and save you money.

NVF

NATIONAL VULCANIZED FIBRE COMPANY

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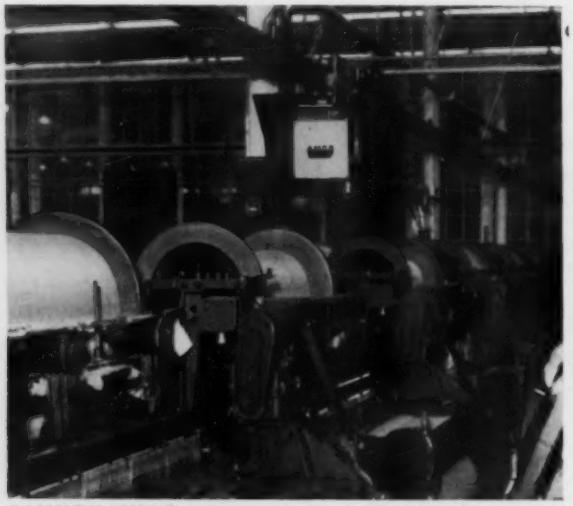
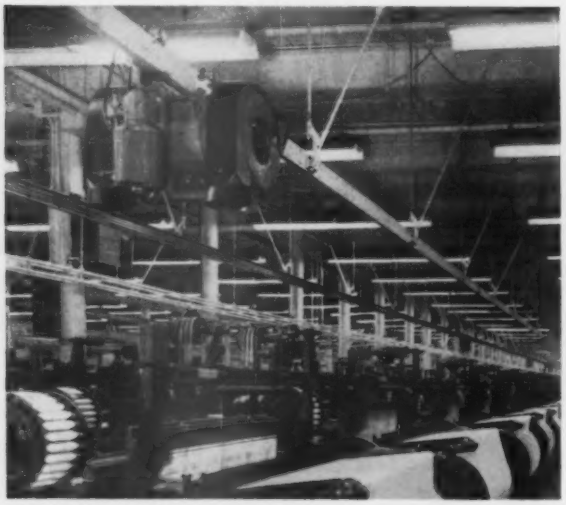
*The warp spooler truck shown has been granted U.S. Patents #2,980,287 and 2,980,497.

4 leading textile mills keep work areas clean automatically with Amco equipment

ALICE MANUFACTURING makes fine broadcloth in its Foster plant. Ceilings, walls, beams, pipes in card rooms are kept free from fly and lint with Amco Ceiling Cleaners. Result: fewer production interruptions for manual cleaning . . . and better quality.



CANNON MILLS, Kannapolis, N. C. plant produces high-quality terry cloth on looms equipped with Unifil loom winders. This fabric maker uses Amco Heliclone® Loom Cleaners for automatic, continuous cleaning. Result: greatly improved weave room cleanliness.



MAYFAIR MILLS, Spartanburg, S. C., relies on Amco Heliclone Loom Cleaners in print cloth weave rooms. Amco Cleaners drastically reduce manual cleaning costs . . . step up production . . . improve fabric quality by preventing waste accumulation.

PALMETTO WORSTED, Laurens, S. C. uses both Amco Heliclone Cleaners and Amco Ceiling Cleaners in its worsted spinning operation. Amco equipment prevents waste, lint and fly accumulations . . . boosts production and helps maintain quality.

Learn how Amco automatic cleaning equipment can help *your* mill. See your nearest Amco representative.

AMCO

SINCE 1888

Air Conditioning Equipment — Textile Specialties

American Moistening Company, Cleveland, North Carolina Branches: Atlanta, Georgia, Providence, Rhode Island, Toronto, Ontario.

Another product in Gates complete line of Textile Accessories

Smoother loom operation makes Gates Tex-Hide Loop Pickers No. 1 choice of leading mills*

Gates Tex-Hide is a super-tough, highly resilient material that assures you of exceptionally long service life for loop pickers. Gates Tex-Hide provides all the shock-absorbing capacity and resilience of leather . . . better than any other material, natural or synthetic.

These Loop Pickers catch the shuttle without bounce, preventing filling thread from breaking or sluffing off the bobbin. They run cool, rapidly dissipating the heat generated in catching and throwing the shuttle.

As a result, Gates Tex-Hide Loop Pickers assure smooth loom operation over a long period. They help maintain the highest quality of cloth, and greatly reduce your down-time costs.

For better, faster, more economical production, equip your looms with Gates complete line of textile accessories. Contact your nearby Gates Textile Distributor.

**Names supplied upon request.*

The Gates Rubber Company, Denver, Colorado BP47
Gates Rubber of Canada Ltd., Brantford, Ontario

There's a Gates Picker for Every Loom Application . . .

SUPER VULCO PICKER
Newest addition to Gates line of pickers. Pale pink color. Excellent for intermediate applications requiring both economy and durability.

VULCO PICKER—*Molded of rubberized fabric . . . low cost. Designed for use in weaving cottons and specialty-type fabrics where low initial picker cost outweighs all other factors.*

GATES TEXTILE ACCESSORIES

Gates — *Building the future on 50 years of progress*

Tex-Hide Harness Straps

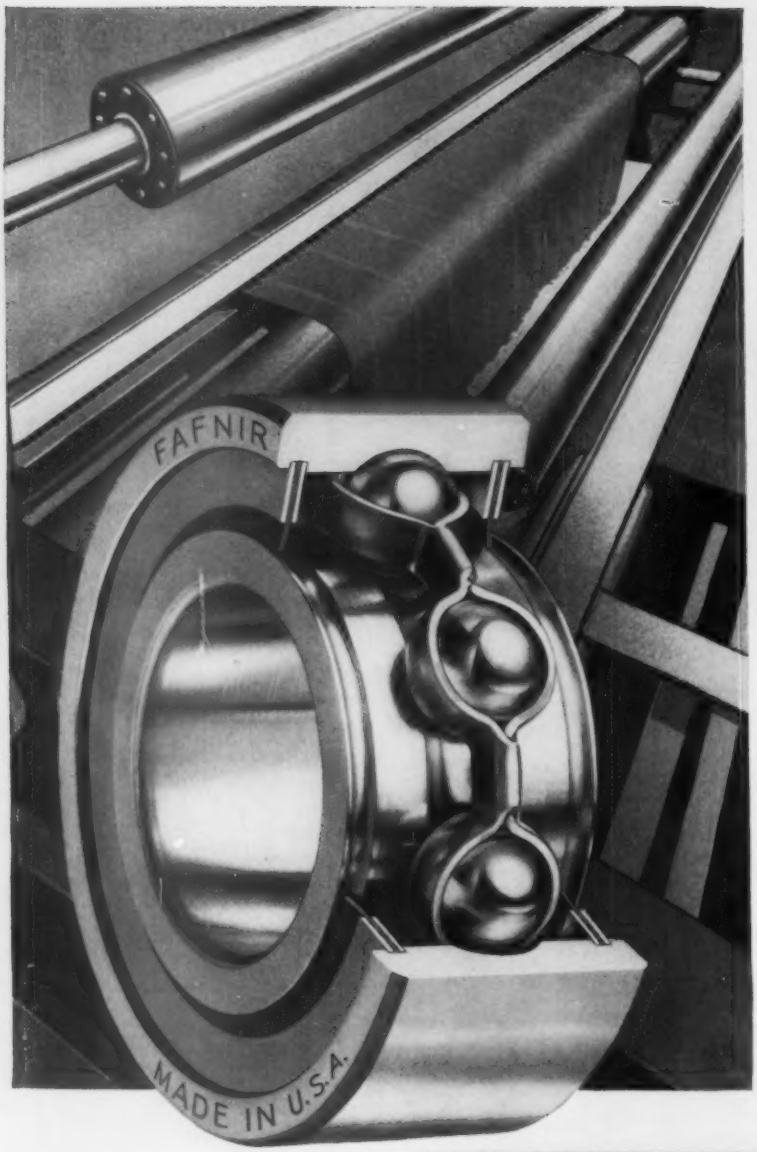
Thin-Tex, Vulco, Tex-Hide and Super Tex-Hide Lug Straps

4-in-one Check Straps

Take-up Roll Coverings
Card Bands Cone and Evener Belts
Spinning Frame Drives

CIRCLE 9 ON READER SERVICE CARD

Look to **FAFNIR**



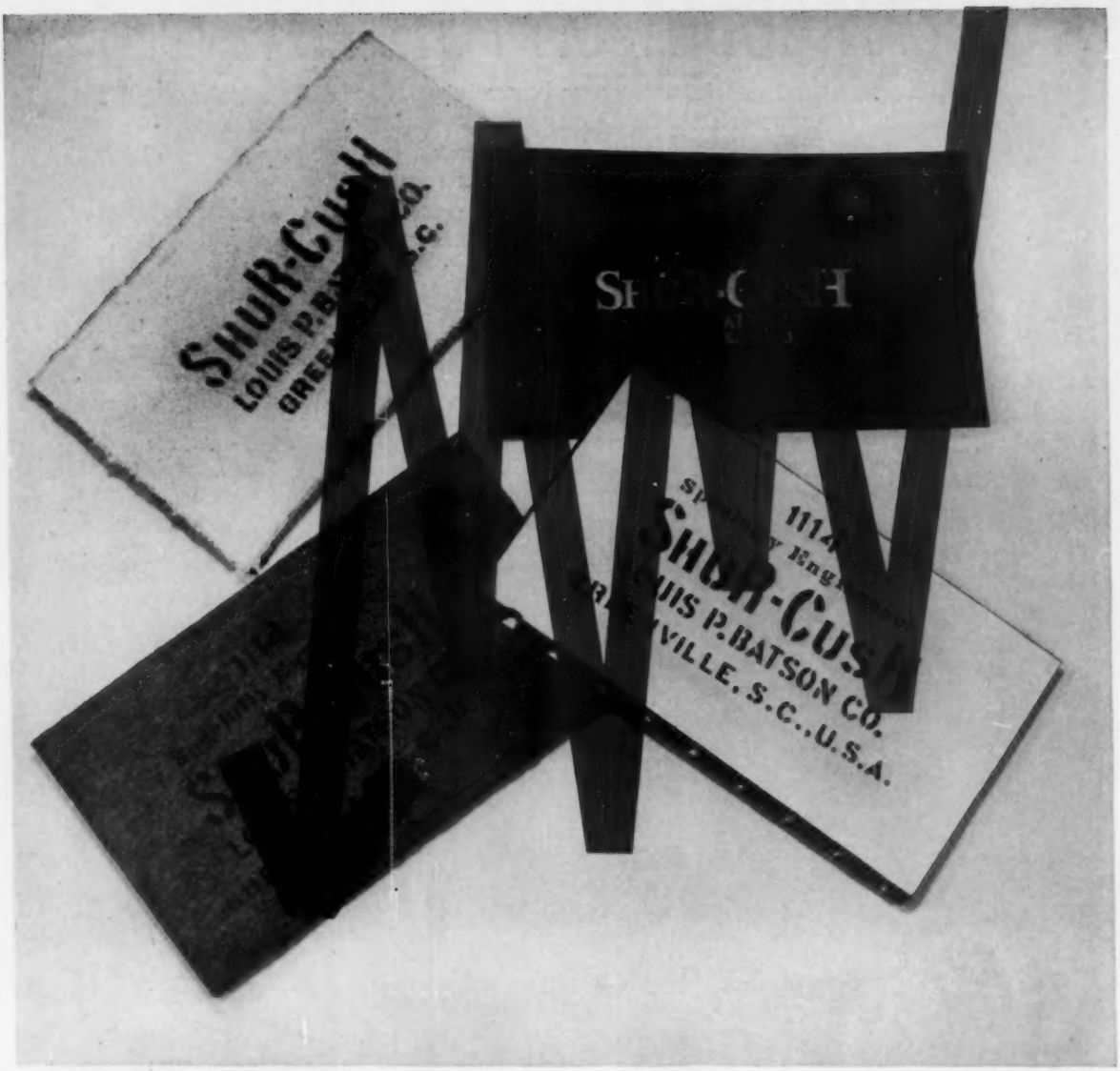
for stainless steel ball bearings that resist corrosion

Textile finishing can "finish off" bearings . . . fast! To control the corrosive effects of moisture, fumes, dyes, and acids, Fafnir developed stainless steel ball bearings with seals designed for extremely severe service. These bearings are used today in a wide variety of textile wet processing equipment. Look to *Fafnir* for leadership in ball bearings. The Fafnir Bearing Company, New Britain, Connecticut.

MADE IN U. S. A.

This stamp on a Fafnir Ball Bearing means finest quality and workmanship . . . dependable supply . . . competent engineering help . . . and responsibility in meeting your bearing needs. It's worth bearing in mind.

FAFNIR
BALL BEARINGS



HERE'S WHY YOU SHOULD ALWAYS SPECIFY BATSON'S SHUR-CUSH PRECOATED OR PLAIN FOR ALL VIBRATION ABSORPTION:

1. Complete quality range . . . from the cheapest that's good to the best that's made. Quality mountings are re-usable when machine is re-located.
2. Complete thickness range . . . from 1/32" to 2".
3. Complete density range.
4. Complete size range. Batson's complete cutting facilities mean you can order: cut-to-size, odd sizes and shapes, rolls, sheets, strips.
5. ShuR-CusH available precoated or plain.

   Apply precoated with its own pressure-sensitive adhesive on both sides.

   Apply plain ShuR-CusH with Batson's ShuR-CusH Adhesive. Maintains bond and actually improves with age because it contains no asphalt derivative to harden and reduce absorbability of mounting.
6. Prompt delivery. Batson always has a complete range of ShuR-CusH in stock ready to rush to you promptly when you need it!

Louis P. Batson Company

Box 3978 • Park Place • Greenville, S.C.

YOU CAN COUNT ON POWELL VALVES

Performance proves it, year after year—you can count on Powell Valves to help you solve the toughest flow control problems of handling water, oil, gas, steam, air or corrosive fluids found in the textile industry.

This truly dependable performance results from many things—among them, Powell's engineering know-how, accumulated during 115 years of valve manufacture . . . and the skillful use of quality materials—bronze, iron, steel and alloys.

Then, too, you can count on getting the Powell Valve you need, when you need it. That's because Powell maintains a network of distributors backed up by factory inventories, warehoused "ready to go."

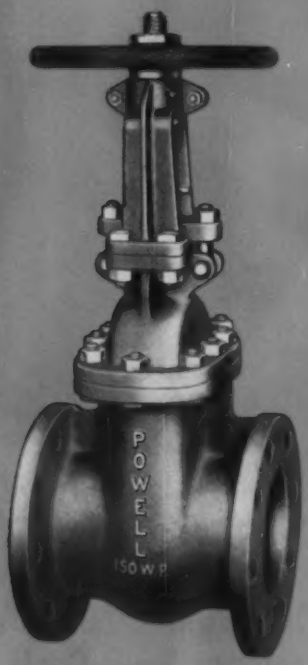
Get the full story from your nearby Powell Valve Distributor, or write us direct.

125-pound All Iron Globe Valve—Fig. 457. Bolted flanged yoke, outside screw rising stem, renewable seat and disc. Sizes, 2" through 12". Angle and screwed end valves can be furnished.

200-pound W.O.G. Ni-resist* Gate Valves—Fig. 2193. Bolted, flanged yoke-bonnet, outside screw rising stem. Accurately guided solid wedge, renewable seat rings. Sizes, 4" through 12".

*Registered Tradename, The International Nickel Company.

150-pound Stainless Steel Horizontal Swing Check Valve—Fig. 2433SS. Bolted, flanged cap. Renewable disc, integral seat. Sizes, 2" through 12". Screwed end valves available.

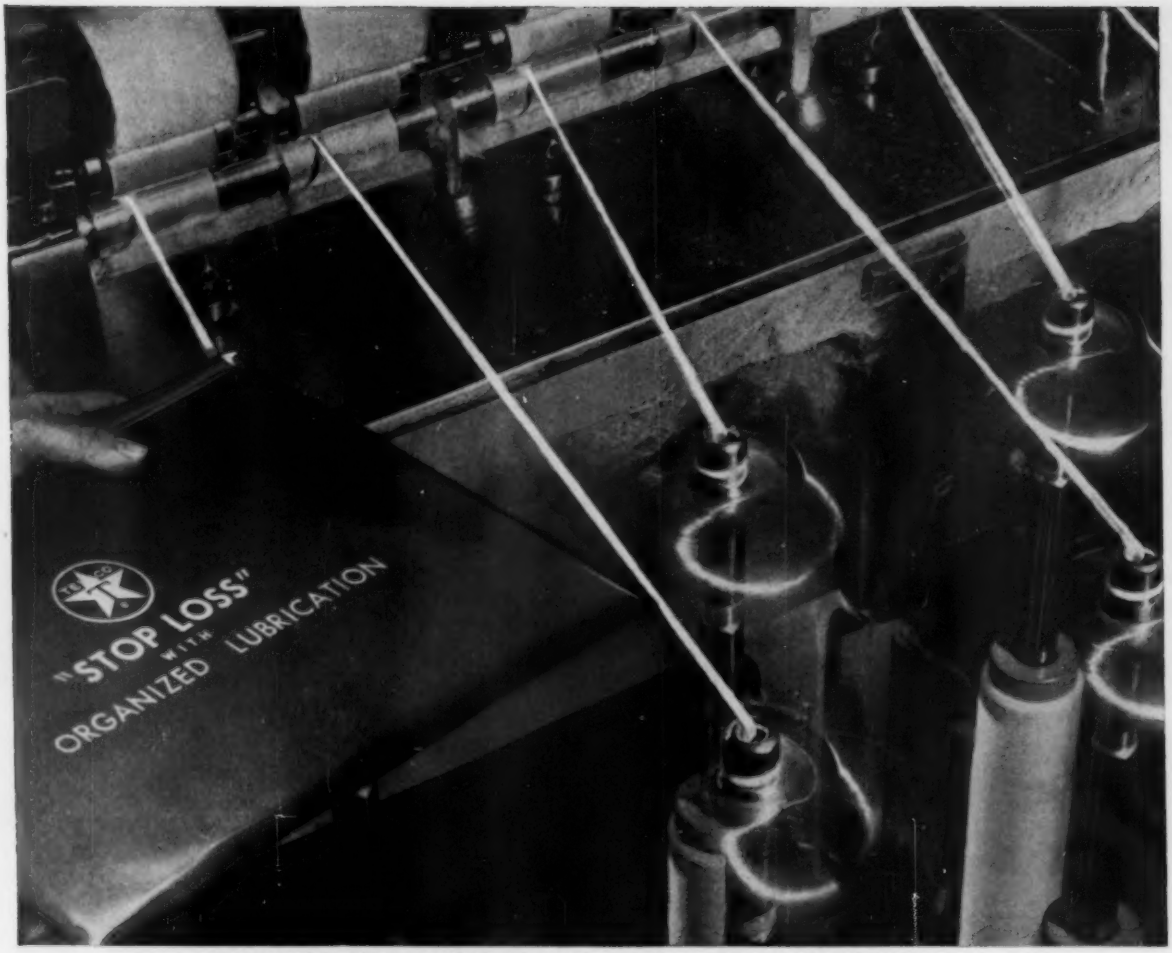


150-pound Stainless Steel Gate Valve—Fig. 2453. Bolted flanged yoke-bonnet, outside screw rising stem. Fully guided interchangeable solid or split wedge, integral seat. Sizes, 2½" through 18".

115th year of manufacturing industrial valves for the free world

POWELL DEPENDABLE VALVES

THE WM. POWELL COMPANY CINCINNATI 22, OHIO



TEXACO'S "STOP LOSS" PROGRAM quickly solves lubrication problems that spoil your profit.

Texaco's "Stop Loss" Program can help you stop profits from creeping away

Oil on the roving! Downtime piles up as you find and correct the trouble—and profits creep away.

Texaco's "Stop Loss" Program can help you eliminate losses due to oil soilage and other causes—*add as much as 4% to your net profit.* It's a completely flexible program and it works in large mills and small.

A "Stop Loss" Program begins with a study of your mill's lubrication requirements—from pickers to looms. This is followed-up with recommendations for a lubrication control system fitted to your mill's needs. Then Texaco provides the basic "tools" needed to make "Stop Loss" work for you.

"Stop Loss" can save money in your mill. See how—by sending for more information. And ask to see our new film, "Stop Loss with Organized Lubrication", which dramatically presents new opportunities for savings. Just mail the coupon below today.

TEXACO

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Canada • Latin America • West Africa

TEXACO INC., Dept. TW-50
135 East 42nd Street
New York 17, N.Y.

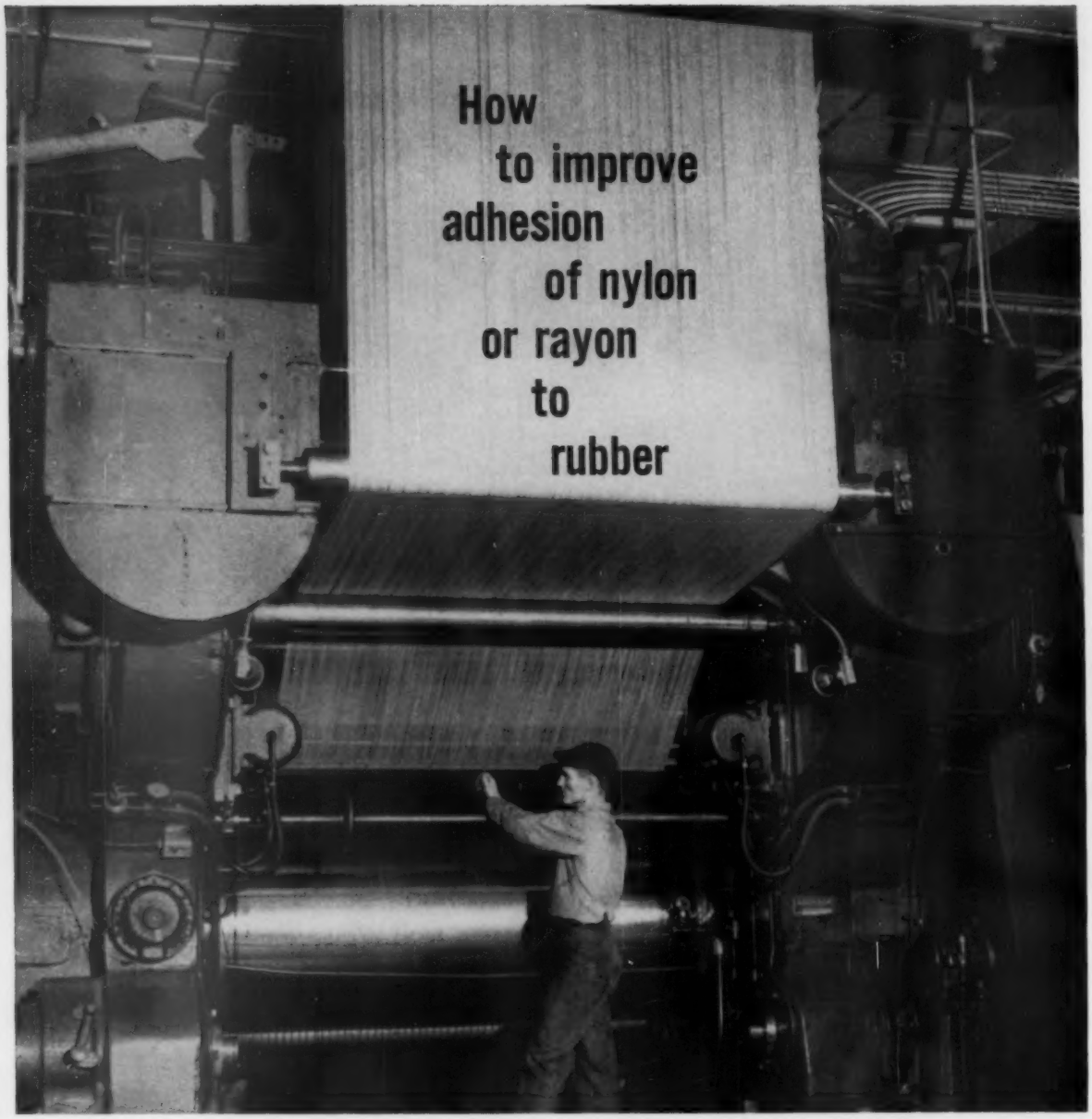
I'd like more information on Texaco's new program "Stop Loss with Organized Lubrication".

Name_____ Title_____

Firm_____

Street_____

City_____ Zone_____ State_____



USE HYCAR 2518. This new vinyl pyridine latex resulted from years of study of problems relating to achieving better performance of fiber-reinforced rubber products. Using Hycar 2518 as pretreatment of man-made yarns, cord and fabric gives positive control, exceptionally high adhesion, easily processed formulations and good "green tack."

Recipes vary according to the fiber involved, the type of rubber stock, and processing limitations and application requirements. Superior adhesion results in all cases. Hand or stiffness of treated fabric or cord can be varied to meet specific needs.

To get more information about this or other ways you can produce better textiles, often at lower costs, write today for information to Department PF-6, B.F.Goodrich Chemical Company, 3135 Euclid Avenue, Cleveland 15, Ohio. In Canada: Kitchener, Ontario.

PRODUCTS FOR TEXTILE IMPROVEMENT

B.F.Goodrich Chemical
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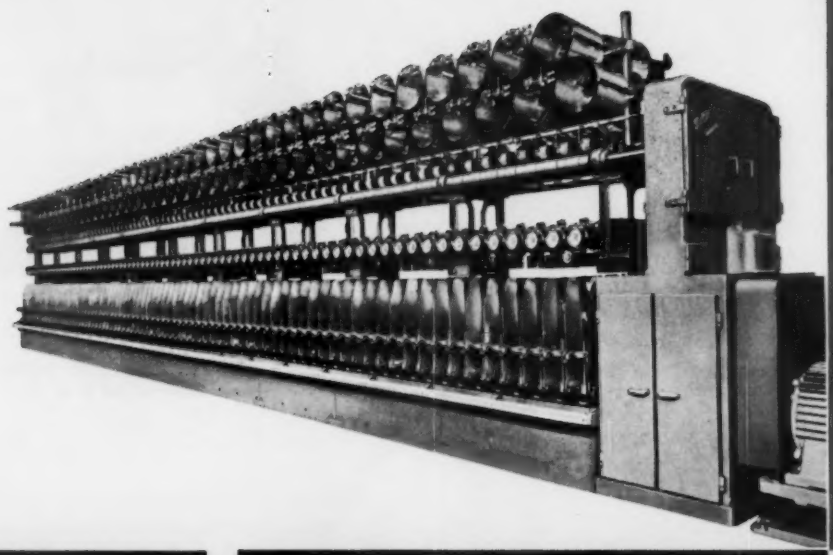


The Rieter draw twister J 5/5 for fine filaments up to 300 deniers ensures an increased output, due to the high delivery speed attainable with a spindle speed of up to 10,000 r.p.m. For both types, the self-lubricating rings can be depressed singly or collectively, allowing the build-up of cops without undrawn material and permitting various methods of operation.

J 5/5

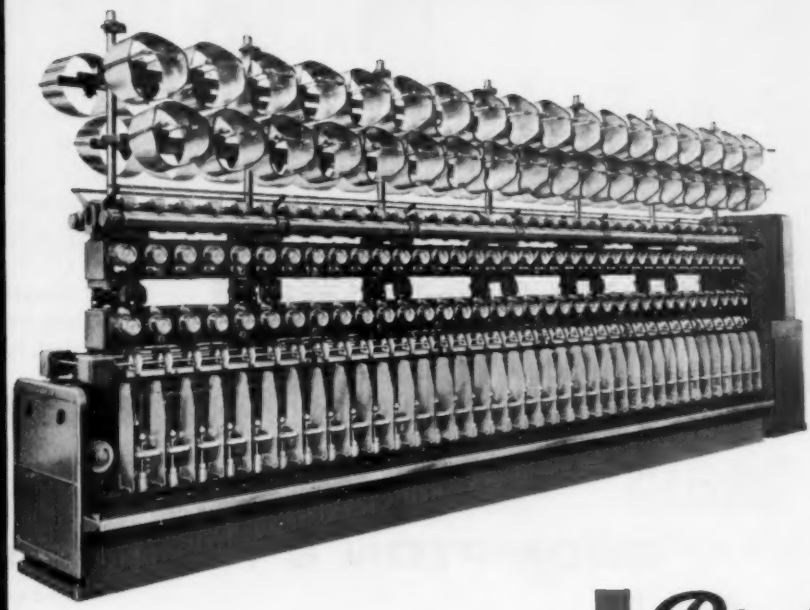
J 5/6

ter
23

Draw twisters

The Rieter draw twister J 5/6 is suitable for coarse filaments up to 1200 deniers. It attains spindle speeds of up to 7000 r.p.m. and delivery speeds of up to 500 m/min = 1650 ft/min. The two rows of godet pulley gearings are placed in completely enclosed housings of heavy cast-iron. Further features of both types are: the extremely robust overall design, the accurate construction of the machine, anti-friction bearings and lubrication by oil bath and oil circulation.

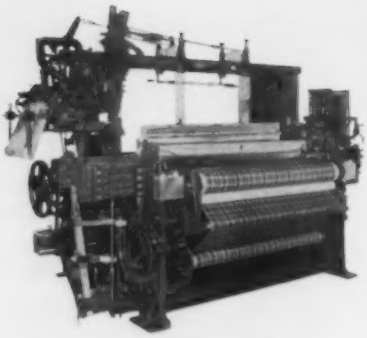
Please ask for detailed information.



Rieter

American Rieter Company, Inc.
West Caldwell, New Jersey
Service Office—Greenville, S. C.

CIRCLE 15 ON READER SERVICE CARD

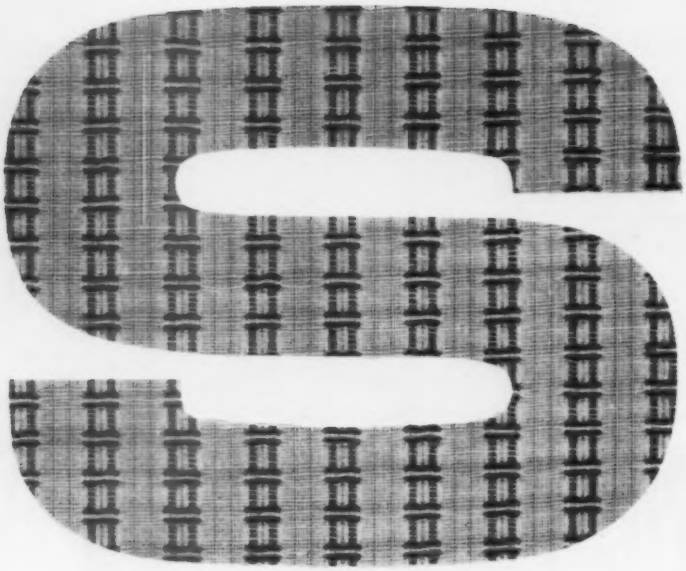


QSEWMT

QUALITY OF CLOTH · SPEED OF LOOM
EFFICIENCY · WEAVER ACCEPTANCE
MAINTENANCE COSTS · TRAINING TIME

SPEED of a loom is more than just picks per minute. Equally important is everything that increases performance and reduces down time due to mechanical failure. More production results from weaving at higher speeds without offsetting loom stoppages.

C & K has built higher speed weaving into the C-7 loom. Double link type binders stabilize shuttle flight, providing easier picking and more accurate checking. The transmitter drive gives a fly wheel effect for steadier operation at high speeds. Exclusive on Crompton & Knowles' new looms, electric protection permits speed without mechanical failure when loom bangs off. Many parts that used to wear, break, or lose adjustment are eliminated.



Push button control permits faster single picks, backups and pick outs. The C-7's electric brain assures faster weaving with increased protection for both loom and operator.

These are but the highlights of the many C-7 features which allow true high speed operation. May we show you some operating comparisons on how to weave more cloth in every hour?

CROMPTON & KNOWLES CORPORATION

WORCESTER, MASSACHUSETTS

C&K

WORLD LEADERSHIP IN AUTOMATIC BOX LOOMS–RESEARCH–ENGINEERING–MANUFACTURE

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The best textiles are sized

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Easy Flow starch

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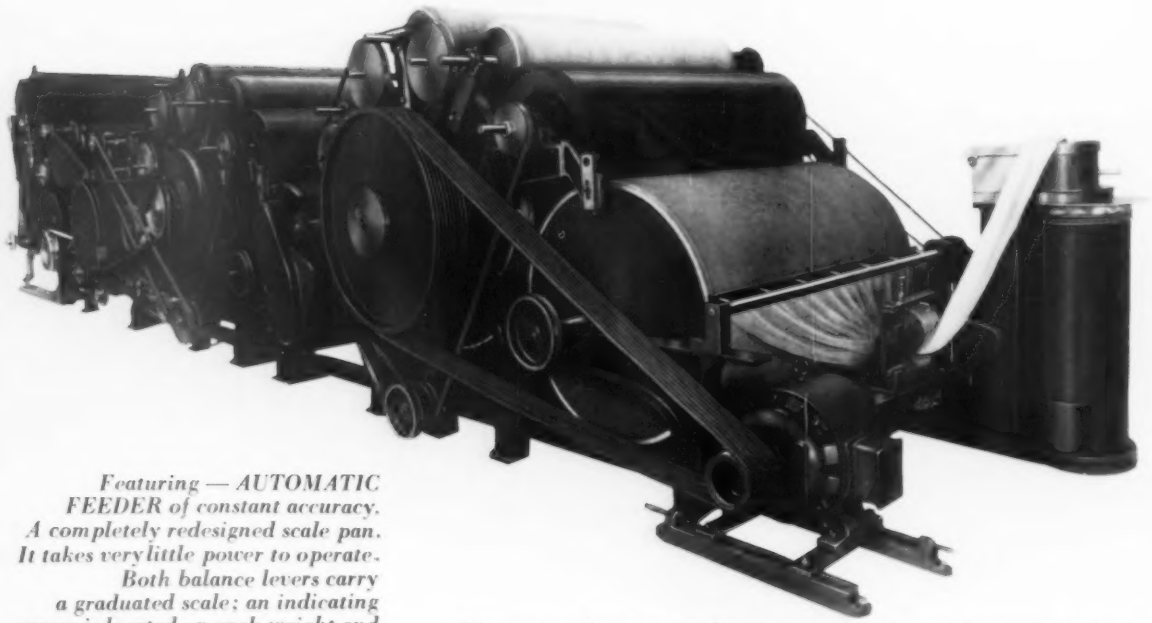
CORN PRODUCTS COMPANY INDUSTRIAL DIVISION • 10 East 56 Street, New York 22, N. Y.

Platt's NEW NARROW WORSTED CARD

Platt's incorporation of a narrow type of driving belt with a higher friction coefficient and its application to the various belt drives on the worsted card has brought:

1. A new machine, 60 in. wide on wire, is narrower overall than the standard 54 in. card. The length remains unaltered.
2. Greater working width in less area gives a higher production per unit of floor space.
3. Use of this narrow belting has enabled us to redesign the chain drives and provide quick access to all adjustment points.
4. The guarding is simpler and more efficient.

This narrow worsted card offers valuable savings in floor space, and particularly in old type buildings — where space has always been a major problem — with the virtues of much improved layouts, better and safer working conditions and greater productions per square foot of floor being fully appreciated; they cannot but result in an increased working efficiency.



Featuring — AUTOMATIC FEEDER of constant accuracy. A completely redesigned scale pan. It takes very little power to operate. Both balance levers carry a graduated scale; an indicating arrow is located on each weight and a fine degree of balancing can be obtained. It is impossible for the machine to over-feed, because the delivery of material is stopped immediately the scale pan has received its predetermined load.

The main advantage of the narrow worsted card, however, is the increased output per square foot of floor space. Ten 60 in. wide narrow model cards can be substituted for ten existing 54 in. wide machines and will give 60-65 lb. per hour greater production for the same floor area and the same number of operatives. To meet the demand for greater continuous lengths of sliver, we have introduced a 20 in. coiler which can be supplied with new machines and is available also for application to existing cards.

For wools with vegetable content in excess of 2% we recommend the Bradford forepart for producing vegetable free slivers for the Bradford, French or American systems.

Synthetic fibres can be processed on a special Platt Card of appropriate power, without burr removal device, incorporating a single cylinder, a two taker-in arrangement and top and bottom dividers. The workers and strippers are well spaced over the cylinder so that staples of 3 in. and over can be processed.

Literature will be sent on request.

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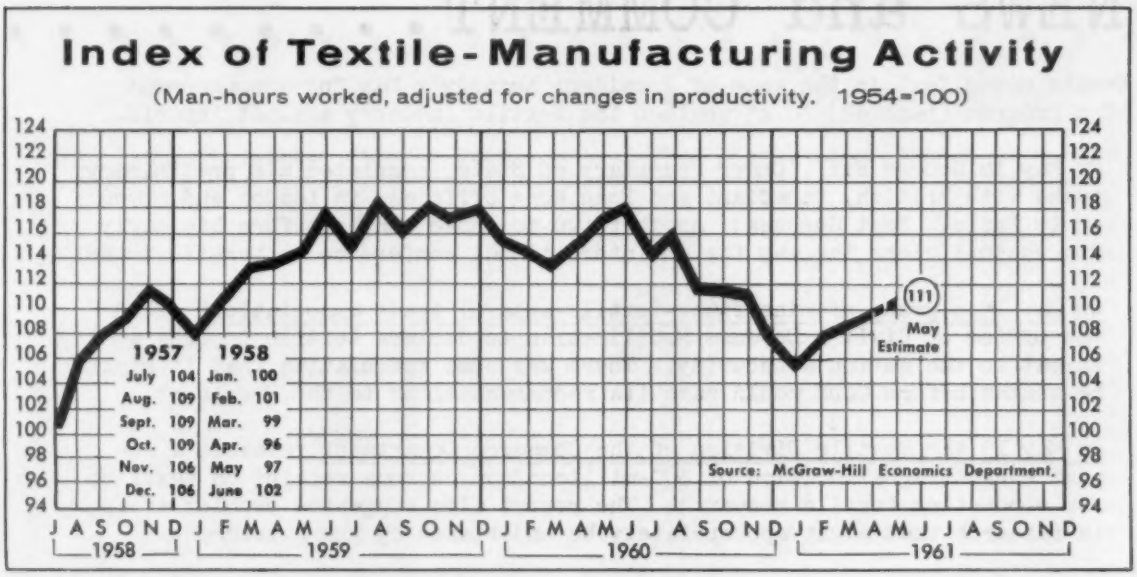


Index Keeps Climbing

Something to cheer about: For the third consecutive month, TEXTILE WORLD's index of textile manufacturing activity scored an advance (chart).

In addition, some tentative signs of improving consumer attitudes have burst on the scene. Outlook for auto fabric sales brightens as auto sales show a steady month-to-month rise (although this year's total sales volume is still sagging below last year's). During the first third of May, an average of 18,300 new cars a day were purchased—the best rate for that period of the month since last November.

Another optimistic indication: the Federal Reserve Board's recent survey of consumers' buying intentions. Consumers indicate they will buy more household goods in future months than they intended to buy last year at the same time.

•

With production rising and order backlogs piling up in key industries, it is evident that business is heading for new peaks. Most of the impetus is coming from businessmen, who are stepping up production briskly. Manufacturers called in more workers in April to boost their output 3% over the normal seasonal gain. Personal income in April rose to an all-time high annual rate of $410.3-billion. This was the second consecutive monthly gain in personal income. It should help to stimulate consumer buying. So far, buyers have been pretty tight-fisted, as reflected by the 1% gain in retail sales over the same period last year.

Figures of the Month

TEXTILE-INDUSTRY INDICATORS

	Latest Month	Previous Month	Year Ago
TEXTILE WORLD'S Exclusive Index (chart above)	110	109	115
Employment (thousands)[1]	905.3	900.9	955.1
Production Workers (thousands)[1]	811.9	807.6	861.4
Weekly Earnings[1]	63.47	63.41	63.76
Hourly Earnings[1]	1.64	1.63	1.61
Weekly Hours Worked[1]	38.7	38.9	39.6
Production Index (1957=100)[2]	105	104	110
Wholesale Price Index (1947-49=100)[1]	94.4	94.7	96.3
Manufacturers' Sales (million $)[3]	1.14*	1.10	1.20
Manufacturers' Inventories (million $)[3]	2.76*	2.73	2.67
Inventories-To-Sales Ratio	2.42*	2.48	2.22
Exports (million $)[5]	182.3*	168.7	164.5
Imports (million $)[5]	99.5*	80.1	118.0
Stock Price Index (1941-43=10)[4]	29.56	29.65	27.63
Failures (numbers)[6]	10	13	4

NATIONAL ECONOMIC INDICATORS

Industrial Production (1957=100)[2]	105	102	109
Consumer Price Index (1947-49=100)[1]	125.7	125.7	126.2
Wholesale Price Index (1947-49=100)[1]	119.4	119.8	120.0
Civilian Population (millions)[6]	180.4	180.2	117.5
Unemployment (millions)[6]	5.0	5.5	3.7
Employment (millions)[6]	65.7	65.5	66.2
Personal Income (billion $)[5]†	410.3	409.8	401.9

* March; otherwise latest month is April.

1. Bureau of Labor Statistics; 2. Federal Reserve Board; 3. Department of Commerce; 4. Standard & Poors; 5. Dun & Bradstreet; 6. Bureau of the Census; † Annual rate.

NEWS and COMMENT. . . . . .

Events moved fast in the wake of President Kennedy's May 2nd announcement of a program (page 42) to strengthen the textile industry against imports.

On May 18 George Ball, Under Secretary of State, completed his preliminary talks with British, Canadian, and Hong Kong officials in London and moved on to Paris. Best Guesses: Another two to three months before his early discussions clear the way for an international conference on textile trade.

On May 15 a group of nine fiber-textile-apparel trade associations asked the Office of Civil & Defense Mobilization to declare textile imports a threat to the nation's security. There was some speculation that it might be months before OCDM would pass its recommendations to the President.

On May 15 the Textile Division of the Commerce Department released a report suggesting allocation of $80-million from customs receipt on textiles for conducting textile research. The report also suggested problem areas in research that might appropriately be undertaken by the government.

On May 7 in Congress, House Majority Leader, John McCormack, introduced a bill that would authorize the Agriculture Department to cut the price of raw cotton to mills manufacturing fabrics for export.

Meanwhile, indicators of the nation's economy announced in May showed a cheerful upward turn. With some chance of an easing in the imports problem (page 42), textile men now can look more hopefully toward sharing in the general business upturn. Details:

Personal income rose to a $410.3-billion annual rate-- up $500-million from March and a new all-time high.

New orders and sales of durable goods each rose 4% in April over March.

Steel output in the week beginning May 15 headed into its 10th consecutive weekly rise, with orders coming in from a broad spectrum of industry.

Industrial production (Federal Reserve Board) in April rose to 105-- up nearly three points from March and reached the highest point since October.

Paperboard orders reached an 18 month high in the week ending May 8.

Factory work-week rose to 39.2 hours in April-- up 0.1 hour from March.

Unemployment fell more than seasonally in the month ending April 15.

Capital goods manufacturers now predict new orders will rise steadily throughout the remainder of the year. They say fourth-quarter volume will be 9% higher than first-quarter volume.

But not quite everything was coming up roses. For one thing, consumer spending edged downward in April for the first time since January, and the April pickup in employment was a little less than normal for that month. Some reported the pickup in textiles was slower than in other industries.

Financial reports coming in at the end of the first quarter from textile manufacturers showed a consistent pattern-- sales and earnings are down. Of the 15 first quarter reports below, only 5 show sales higher than a year ago, and only 2 show an improvement in profits.

Company	Sales ($1,000's)	Change from Year Ago	Earnings ($1,000's)	Change from Year Ago
Latest Quarter				
Joseph Bancroft	$ 7,982	+ 7.0%	$ 337	+16.6%
Berkshire Hathaway	12,980	-23.6%	267	-81.5%
Bigelow-Sanford	18,496	+ 4.9%	326	-19.6%
Burlington Industries	207,745	-11.5%	3,915	-61.3%
Cone Mills	46,551	- 2.1%	303	-73.2%
Dan River Mills	37,426	-14.2%	1,274	-32.1%
Erwin Mills	16,238	+ 1.1%	362	-46.5%
Firth Carpet Co.	5,367	-17.9%	(Loss 78)	-160.9%
The Kendall Co.	25,970	+ 1.3%	1,016	- 6.1%
M. Lowenstein & Sons	114,311	- 8.4%	589	-70.8%
McGregor-Doniger	11,552	- 4.9%	270	-27.2%
Mount Vernon Mills	8,436	-21.5%	171	-20.1%
Munsingwear, Inc.	11,408	+ 9.8%	275	-12.9%
Roxbury Carpet	3,698	-11.7%	663	-98.6%
Wayne Knitting Mills	2,896	- 7.3%	196	+17.7%
Latest 6 Months				
Berkshire Hathaway	26,616	-26.3%	808	- 70%
Burlington Industries	422,046	- 9.2%	9,824	-53.8%
Chadbourn Gotham	30,386	- 2.0%	1,157	+549.0%
Duplan Corp.	16,688	+12.9%	138	-36.4%
Erwin Mills	31,802	+ 2.9%	688	-38.2%
Riegel Textile Corp.	41,847	-17.4%	601	-53.1%
Textiles, Inc.	13,456	-13.9%	597	-31.1%

As for suppliers to the textile industry, sales and earnings of fiber manufacturers were down in the first quarter. On the whole, other suppliers held their own or marked up gains.

Company	Sales ($1,000's) Latest Quarter	Sales ($1,000's) Year Ago	Earnings ($1,000's) Latest Quarter	Earnings ($1,000's) Year Ago
American Viscose	$ 50,315	$ 54,825	$ 1,834	$ 2,011
Celanese Corp.	62,034	66,712	3,560	4,848
Crompton & Knowles Corp.	8,656	7,022	951	628
Maremount Automotive	15,737	6,769	601	333
Mill Factors Corp.	60,311	56,037	147	120
Owens-Corning Fiberglas	48,034	51,189	2,091	4,012
Pennsalt Chemicals	21,989	21,944	1,214	1,269
Singer Manufacturing Co.	138,534	123,080	6,738	5,808
Talon, Inc.	10,161	9,935	519	415
White Sewing Machine	6,191	6,716	(Loss 50,709)	152

WASHINGTON OUTLOOK . . . . .

Washington is now looking more closely at textiles than it has in many years. Main reason: Administration handling of textile problems can set a pattern for other industries, too.

President Kennedy's decision on textiles-- not to impose quotas but to try a program of "adjustment assistance"-- came as his first major trade policy act. Some trade experts wonder why he didn't postpone the problem (an acceptable bureaucratic technique), especially in view of a rising tide of protectionism in Congress and the prospects of a heavy trade-bill fight in 1962.

Best answer is that the textile decision came in a logical sequence and that Kennedy likes to act promptly. He promised during his campaign that textile problems would be studied. He ordered the study started right after his inauguration. When the study was completed, he made his decision.

*

Two aspects of the Kennedy textile program are stirring the most general interest: the bid for an international voluntary agreement on imports and the Treasury's study of higher depreciation allowances.

The State Department started almost at once to seek international cooperation in leveling the peaks and valleys from the world textile distribution and production pattern. Under Secretary of State George Ball and aides left in mid-May to begin negotiations in Europe.

Officals warn against expecting immediate success in negotiating an international agreement. Best result the Administration now expects from Ball's trip is some tentative agreement in principle from West Europe's textile-buying countries.

*

On taxation, the Administration has long wanted to revise depreciation schedules, but doesn't want a fight in Congress about them.

In an earlier decision to spur the nation's economy, the President plumped for business tax relief through a special tax credit scheme rather than increased depreciation. The tax-credit vs. depreciation fight now is going on in the House Ways & Means Committee, which doesn't expect to wind up its hearings on the subject before mid-June.

Meanwhile, depreciation for textile plants and machinery is getting special study by Treasury (page 42 of this issue). Other industries are anxiously awaiting the results. If textile depreciation is increased, other groups will ask for similar treatment.

*

There will be no early action on the textile industry's national-security plea before the Office of Civil & Defense Mobilization. The industry seeks a finding under the Trade Act that imports threaten the nation's security.

OCDM won't decide the question until other remedies, such as State's efforts toward an international agreement, are tried.

HIGH QUALITY

Attained through:
- Minimum of defects
- Perfect mixture of materials
- Uniform weaving action

Resulting in:
- Less supervision
- Easy personnel training
- Reduction in down time
- Practically no replacement parts
- High productivity
- Making it possible to operate at —

MINIMUM COST

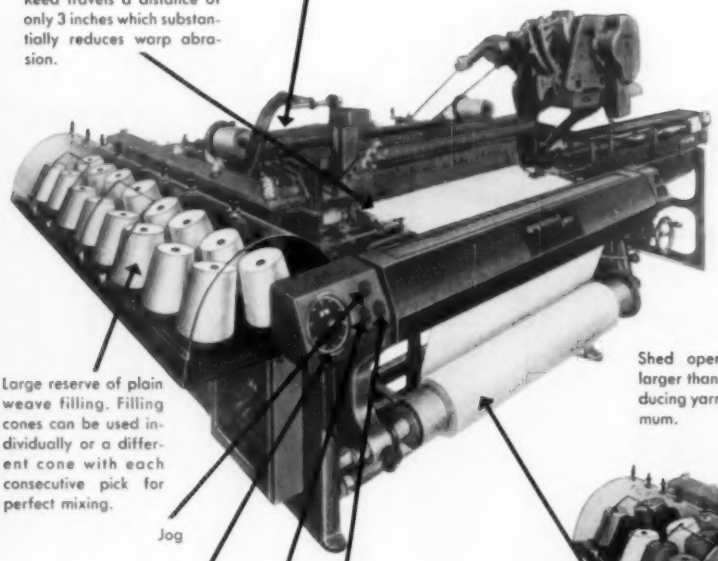
Fabrics can be woven:
- Using 8 filling colors or materials
- In any design
- From any material

This combination will permit a

GREATER PARTICIPATION IN THE MARKET

- and the Universal Iwer loom provides the three essential elements:

HIGH QUALITY + LOW COST + FLEXIBILITY



Constant warp tension

Reed travels a distance of only 3 inches which substantially reduces warp abrasion.

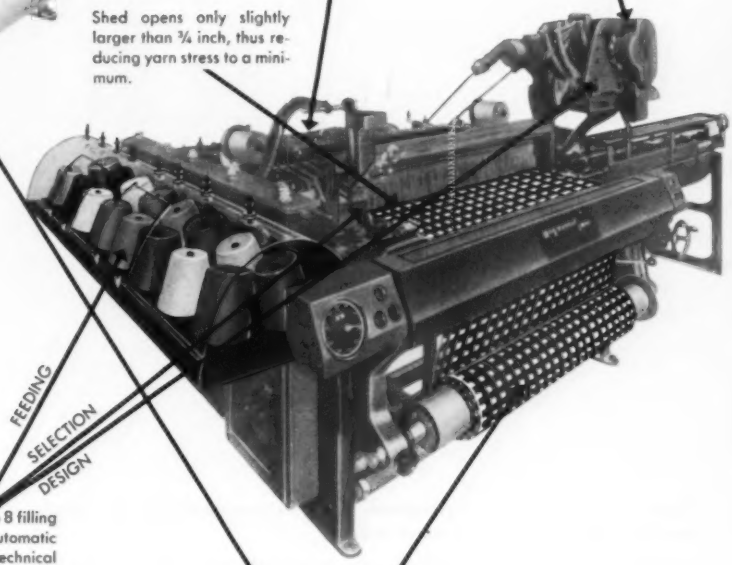
Large reserve of plain weave filling. Filling cones can be used individually or a different cone with each consecutive pick for perfect mixing.

Jog

Cloth measurement meter with automatic stop.

Start

Stop



Automatic let-off

Dobby with joined controls which allows any variety of fabric design.

Shed opens only slightly larger than ¾ inch, thus reducing yarn stress to a minimum.

FEEDING

SELECTION

DESIGN

FEEDING up to 8 filling colors with automatic SELECTION (technical Pic & Pic) predetermined by the DESIGN set-up in the special dobby head.

SHUTTLELESS LOOM

universal IWER

ANCET-FAYOLLE LICENSES

Plain Weave or a Pattern can be woven on the SAME LOOM at an incomparably low cost!

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CIRCLE 23 ON READER SERVICE CARD

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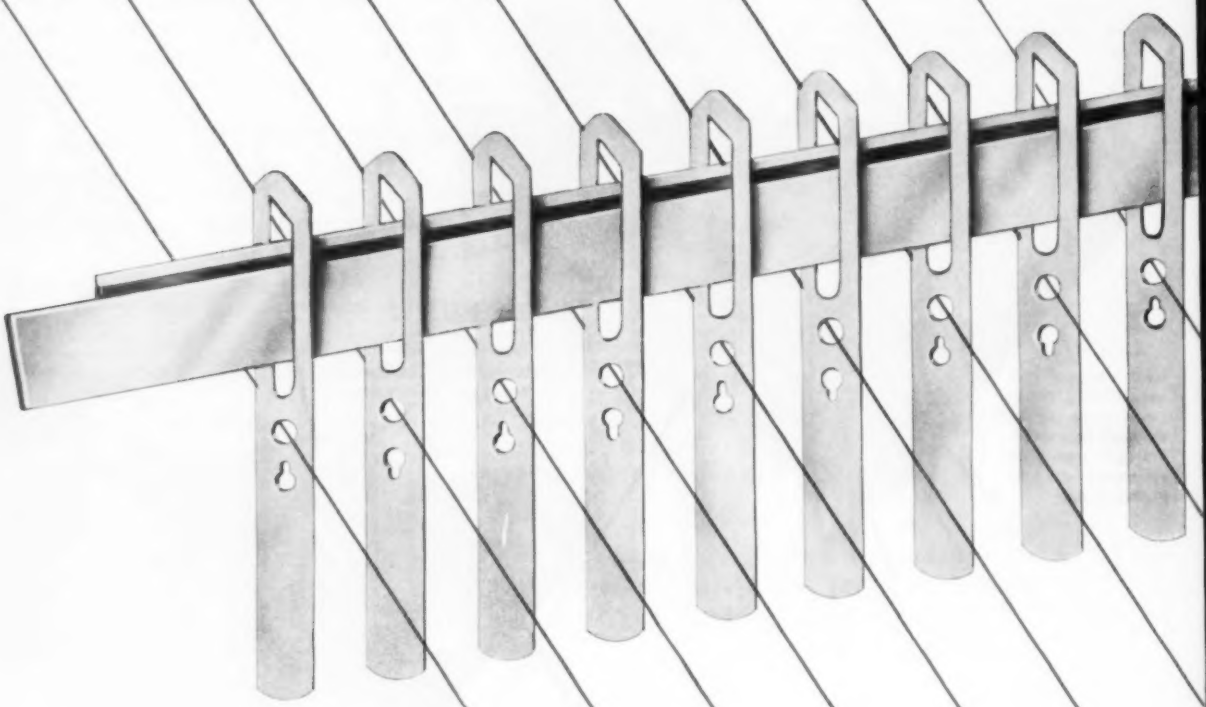
Stehedco DROP WIRES

Guard Your *Quality*



Your drop wires are important, too, in maintaining the high quality you expect from your looms.

Stehedco Quality Drop Wires are designed and manufactured under the same strict Quality Control as all other Stehedco Quality Products—and are equally as dependable.

Premium quality materials are used, and the same expert care is used in their manufacture, to assure you the finest drop wire your money can buy. Dependable performance and longer trouble-free life are the reason for their great popularity.

Equip your looms now with top quality Stehedco Drop Wires and eliminate costly seconds from broken ends. Any type, any size can be made to fit your requirements.

Ask one of our qualified Sales Engineers to show how you can improve your production and profits by using Stehedco Quality Drop Wires.

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NO BAD DEBT LOSSES

NO NON-PROFIT CREDIT AND COLLECTION WORK

NO ACCOUNTS RECEIVABLE LEDGERING

MORE TIME FOR CREATIVE BUSINESS BUILDING ACTIVITIES

MORE PROFIT!

Your Heller Factoring Plan is designed for you alone. Your Heller Representative knows your needs and ambitions, and works with you to make your growth DYNAMIC. Take a new look at factoring—at Heller Factoring. Get the informative booklet, "Profit Through Factoring"—no obligation!

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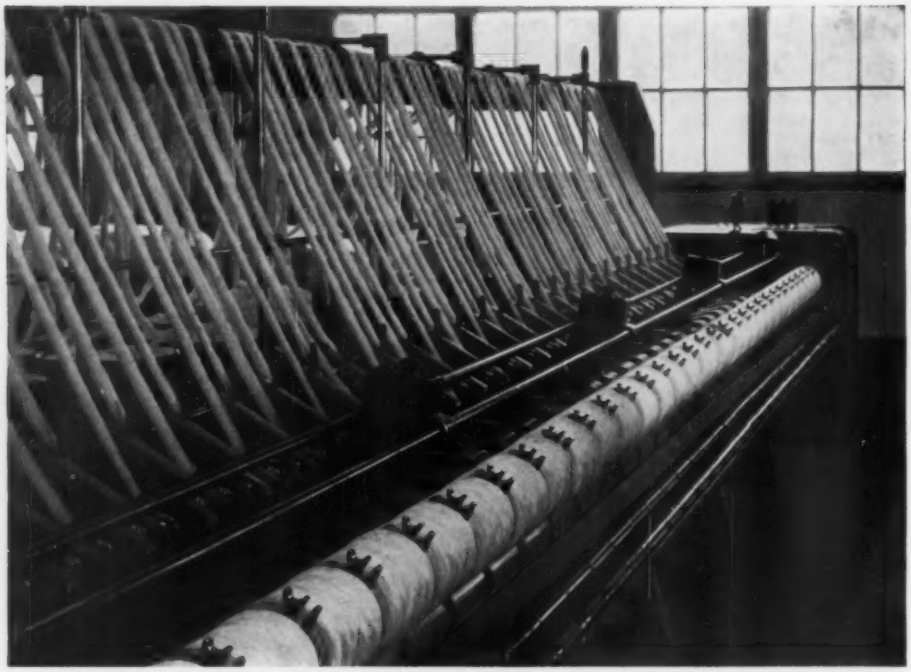
City_____ Zone_____
State_____



High Draft Finisher, model KSD

4 to 20 heads with 2 bobbins each

Double sliver

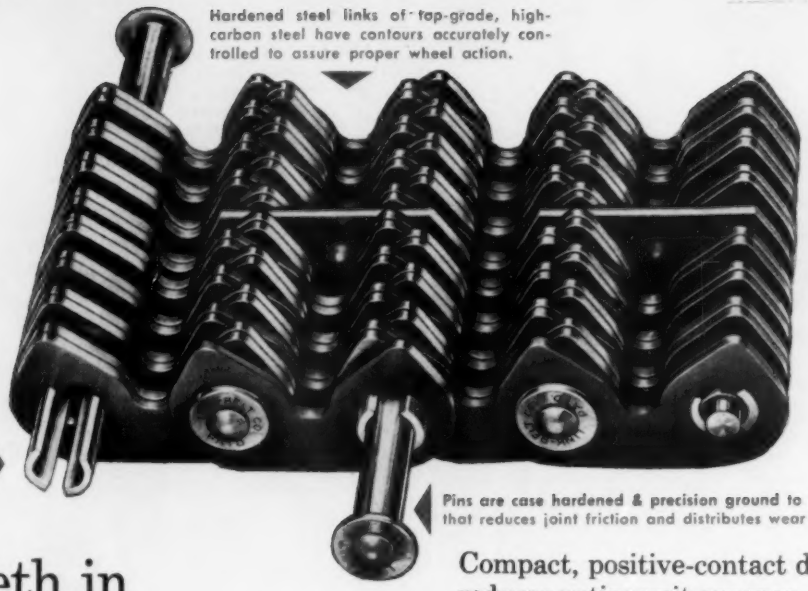
Delivery speed up to 50 m/min. (164 ft./min.)

Draft 10 to 28

Ratch adjustable by hand crank

Capitalize on our experiences gathered in the course of many years.
Our experts will be glad to advise you on the planning and modernization of complete spinning mills for cotton, worsted, staple and man-made fibres.

INGOLSTADT DEUTSCHER SPINNEREIMASCHINENBAU INGOLSTADT


Hardened steel links of top-grade, high-carbon steel have contours accurately controlled to assure proper wheel action.
Bushings of specially selected steel are case hardened to take joint wear and prevent elongation of link hole.
Pins are case hardened & precision ground to permit free rotation that reduces joint friction and distributes wear over entire surface.

The teeth in Link-Belt silent chain put the bite on drive costs

Compact, positive-contact design reduces entire unit expense

There are big savings to be found by switching to modern, versatile Link-Belt silent chain drives. Smooth, positive engagement prevents slippage, eliminating wasted horsepower. Long life—continuous operation with minimum maintenance for many years is common—keeps production costs down.

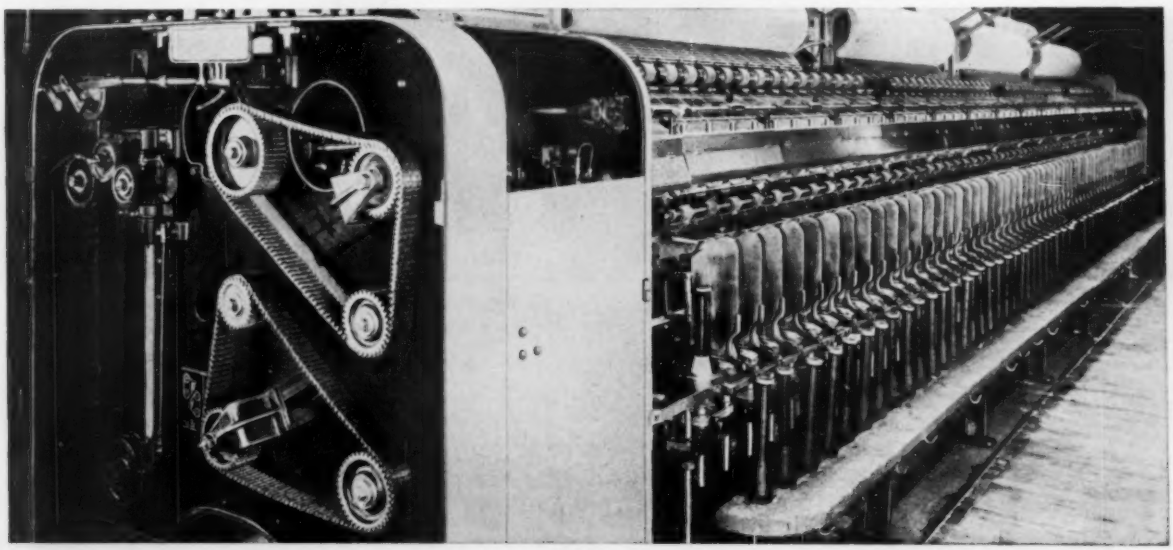
Now consider these additional advantages: dependable operation under extremes of temperature and humidity; easy assembly in tight spaces, permitting built-in drives, compact housings; space saving and efficiency on extremely short centers at ratios as high as 10-to-1.

Link-Belt silent chain is available in a full range of types and sizes for either large or fractional-horsepower drives. For full details, call your nearby Link-Belt office or authorized stock-carrying distributor. Look under CHAINS in the yellow pages of your phone book. Ask for Book 2425.

LINK-BELT

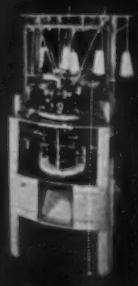
SILVERSTREAK SILENT CHAIN DRIVES

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Warehouses, District Sales Offices and Stock Carrying Distributors in All Principal Cities. Export Office, New York 7; Australia, Marrickville (Sydney); Brazil, Sao Paulo; Canada, Scarboro (Toronto 13); South Africa, Springs. Representatives Throughout the World. 15,449-A



"READING" CK-A
for inlays, circular suturing, overplaids, and high-fashion socks with the continental look

"READING" CK-B
for high production of plain dress and crew socks



"READING" CK-C
Universal men's and boys' sock machine

"READING-BOOTON"
Twin-Feed
Ladies' Seamless
Hosiery Machine

"READING" Mark III
Twin-Feed Lace
Machine for Ladies'
Seamless Hosiery

Spring-Beard Needles

Latch Needles

Precision Leaded Parts

Flat Parts for Full-Fashioned and Circular Knitting

"READING" Mark IV
Four-Feed Ladies'
Seamless
Hosiery Machine

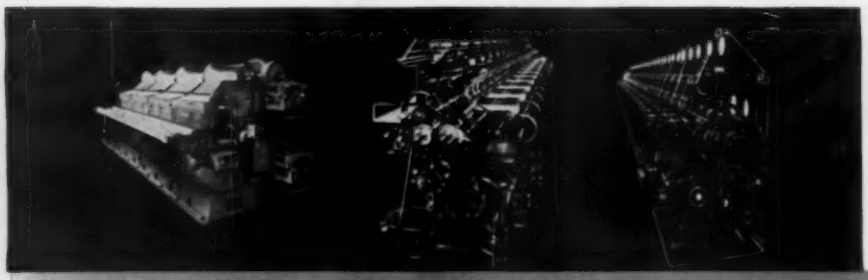
AT TEXTILE

Dependability

COMES FIRST

Where profits are highest and maintenance cost lowest — you'll find "READING" equipment. All of the machines and parts illustrated here are proved in service for profitable knitting results. Don't be satisfied with anything less than the best. Buy "READING"!

TEXTILE MACHINE WORKS, READING, PA.



"READING" High-Speed Tricot Machine

"READING" Full-Fashioned Outerwear Machine

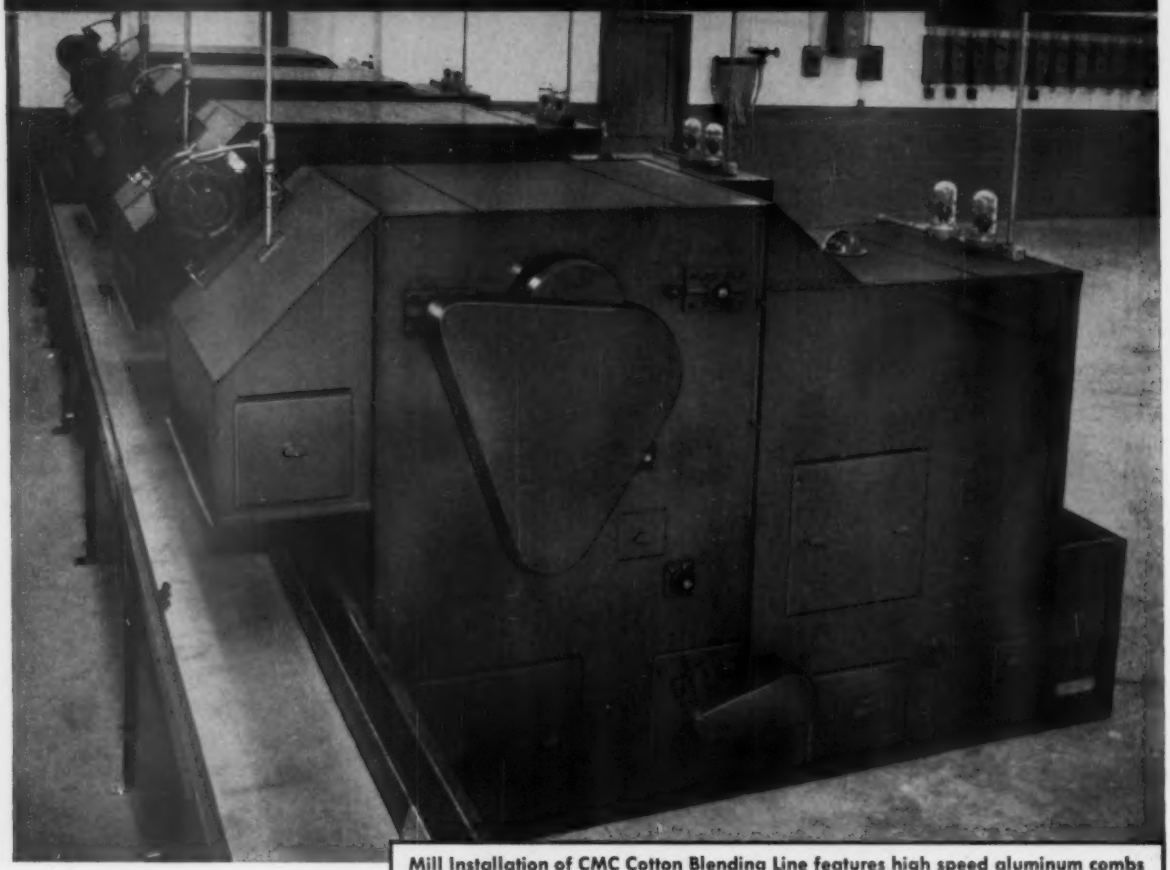
"READING 200" Full-Fashioned Hosiery Machine

TEXTILE MACHINE WORKS

Where engineering makes the difference

CIRCLE 29 ON READER SERVICE CARD

FIBER PROCESSING MACHINES
For the Textile industry



Mill Installation of CMC Cotton Blending Line features high speed aluminum combs producing stock in fine tufts, which permits ultimate in opening and blending.

OTHER CMC TEXTILE EQUIPMENT

Granular Top Cards
SRRL Openers, Cleaners
Absorbent Cotton Processing Machines
Aprons
Fiber Blenders
Ceiling Condensers
Cotton Cleaners and Openers
Conveyors
Cotton Condensers
Blending Feeders
Card Feeders
Lickerins
Nonwoven Fabric Machines
Synthetic Staple Openers
Picker Lags
Waste Machines

WRITE for detailed information. Inquiries invited.

CMC CAROLINA MACHINERY COMPANY

SUBSIDIARY OF CURLATOR CORPORATION, EAST ROCHESTER, N. Y.

Mfrs. of Opening, Cleaning, Blending and Other Fibre Preparatory Equipment

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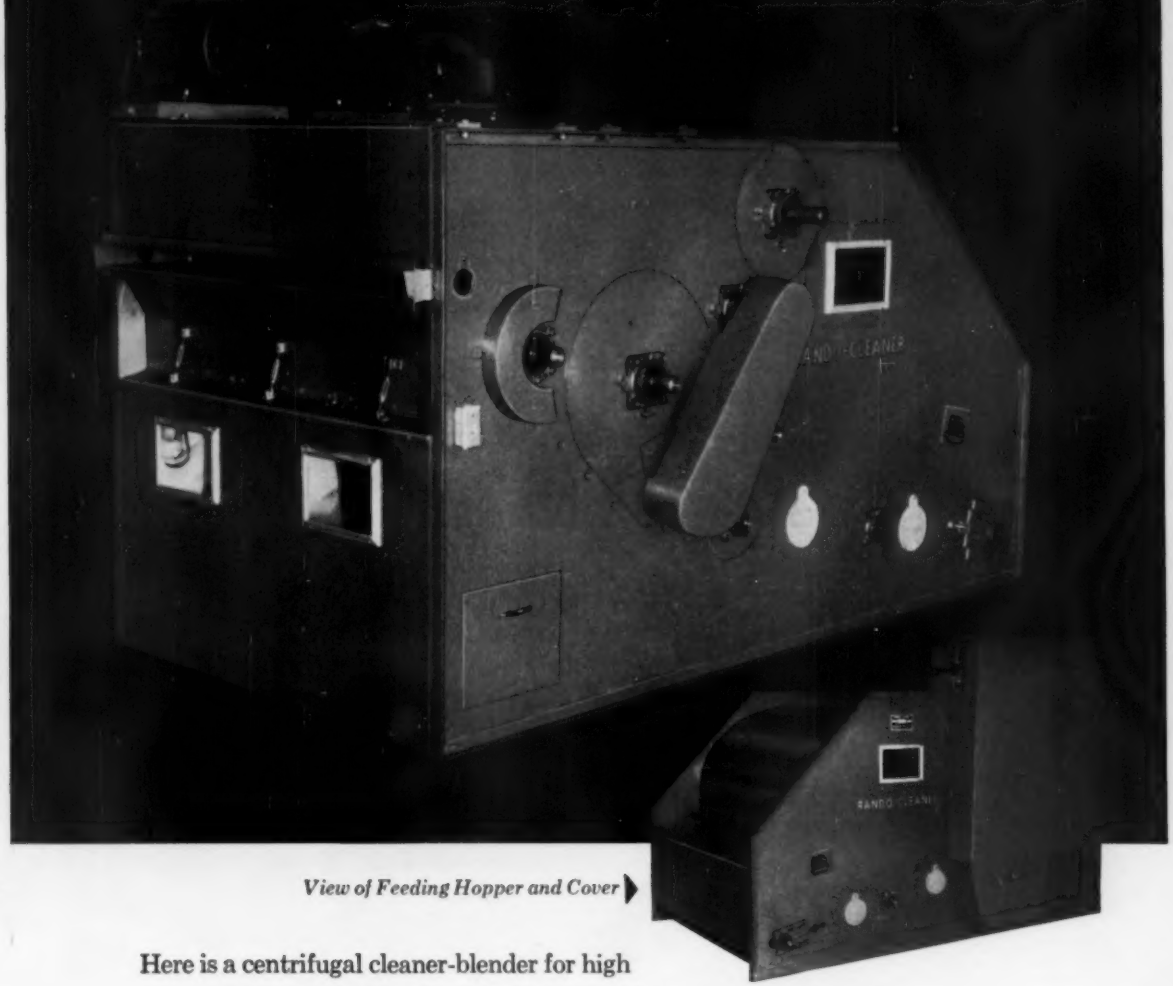
Announcing CURLATOR'S

RANDO-CLEANER



View of Feeding Hopper and Cover

Here is a centrifugal cleaner-blender for high trash content cotton. The use of this machine results in an approximate 35% increase in opening line cleaning efficiency without adversely affecting the fibers or yarns.

WRITE for detailed information. Inquiries welcomed.

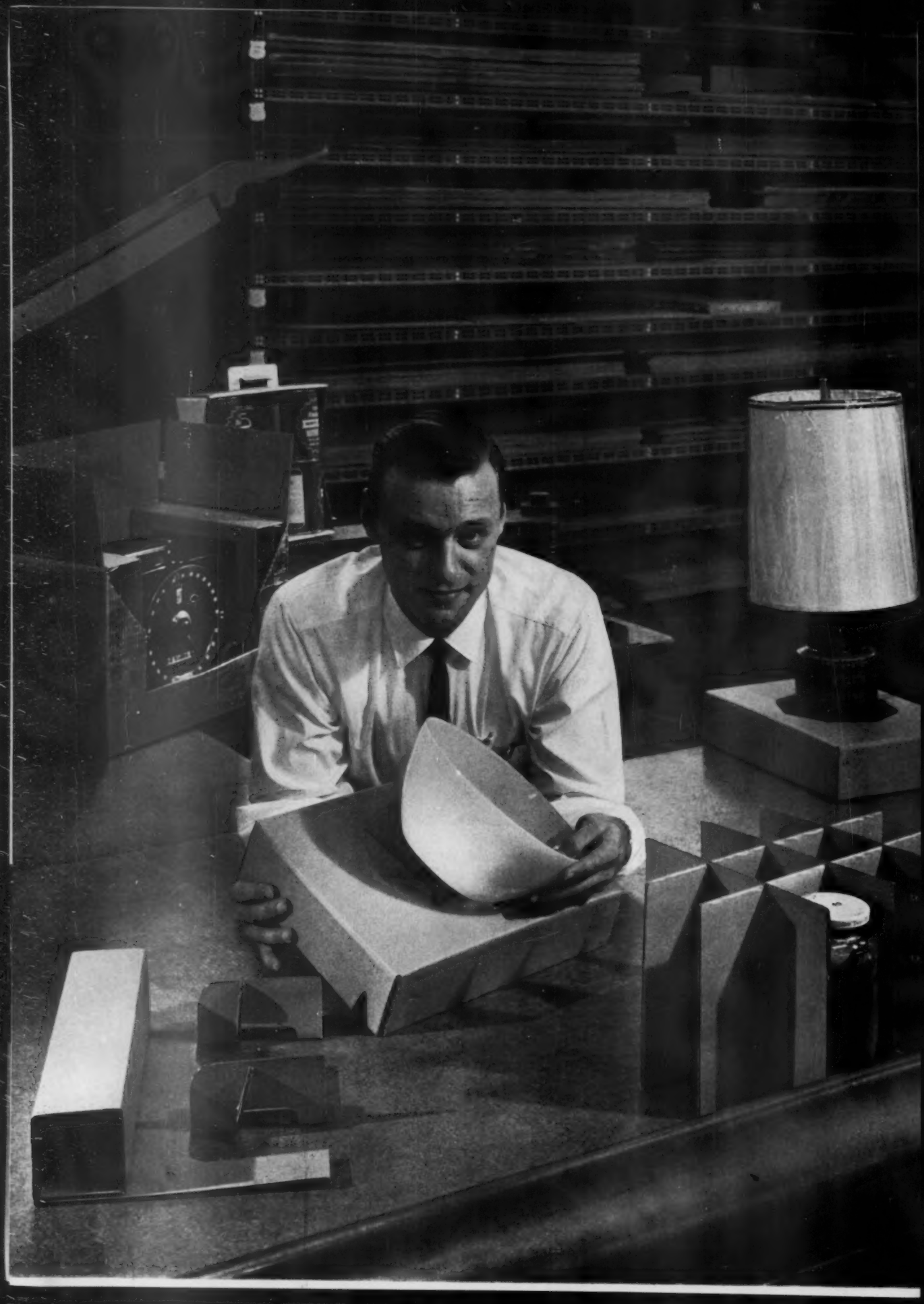
TEXTILE DIVISION
CURLATOR®
CORPORATION
EAST ROCHESTER, NEW YORK

CURLATOR...World's Leading Manufacturer of Fiber Web Processing Machinery

A Member of
American Textile Machinery Association

SOUTHERN STATES:
Carolina Machinery Company,
Subsidiary, P. O. Box 1922, Charlotte 1, N. C.

CIRCLE 31 ON READER SERVICE CARD



No wonder his wife leaves the packing to him!

You can count on Union-Camp box designer Bob Pyle to come up with the most efficient corrugated interior packing—no matter what the product or how it is shipped.

THE GLASS BOWL in our picture is safe enough in Bob Pyle's hands. The trick is to see that it travels just as safely once it is packaged.

This takes an unusual combination of skill and experience. The kind Bob is known for. Bob is one of a team of Union-Camp corrugated box engineers who specialize in *interior* packaging of a product.

It's a challenging specialty. Just consider the problems of packaging a television set, for instance. Says Bob: "The set must be *locked* in position and perfectly cushioned against shock. Then we have to allow sufficient clearance on all sides so that the *finish* is protected against scratches. And the box should have sufficient stacking strength so that it can be tiered up high in the warehouse.

"Then there's the packing operation to consider. The box must be adaptable to high-speed assembly line operation so that the job can be done as quickly and cheaply as possible—consistent with the protection needed."

Other products, Bob points out, may call for different types of safeguards in the package. To keep out dust. To prevent corrosion or spoilage. Actually, the forms of inner packing are as varied as the items they protect.

Some of these items are well-known: food products, canned beverages and appliances, for example. But some others may surprise you. High-voltage equipment weighing over 300 pounds. Centrifugal pumps. Heavy industrial sewing machines. Formerly they required expensive crating. Now they travel safely and economically in custom-tailored containers developed by Union-Camp box designers like Bob Pyle.

Oddly enough, small-cost items often can create the biggest problems. One case in point was a lamp sold in variety stores for only $2.98. It was made of a fragile plastic, and the manufacturer's profit margin was so low that he had almost no budget for the intricate packaging that would seem to be necessary for proper protection. Bob Pyle devised a simple, inexpensive inner packing unit. To date, not a single lamp has reached its destination in a damaged condition!

Could a Union-Camp box designer like Bob Pyle help improve your product's protection, reduce your packaging and shipping costs? The answer is as near as your telephone. Call in a Union-Camp corrugated box representative. He'll tell you about our complete packaging evaluation program. It includes package analysis, box design and development, specifications control, merchandising counsel and in-plant surveys of your materials handling operation.

Or, a note on your letterhead will bring a prompt reply. Why not write today?

UNION-CAMP®

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Trenton, New Jersey: 1400 E. State St.
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†Cleveland, Ohio: 10200 Miles Ave.
†Sharonville, Ohio: P.O. Box 86
Chicago, Ill.: 4545 West Palmer
†Benton Harbor, Mich.: 11th St. & Britain Ave.
†Monroe, Mich.: 1109 East Elm Ave.
†Eaton Rapids, Mich.: P.O. Box 8
*Baltimore, Md.: Eastern Box Co.: Wagner's Point
Jamestown, N.C.: 3704 Point Pleasant Rd.
Spartanburg, S.C.: P.O. Box 1965
Savannah, Georgia: P.O. Box 570
Lakeland, Florida: P.O. Box 454

*Subsidiary Companies †River Raisin Division

From raw material to finished product

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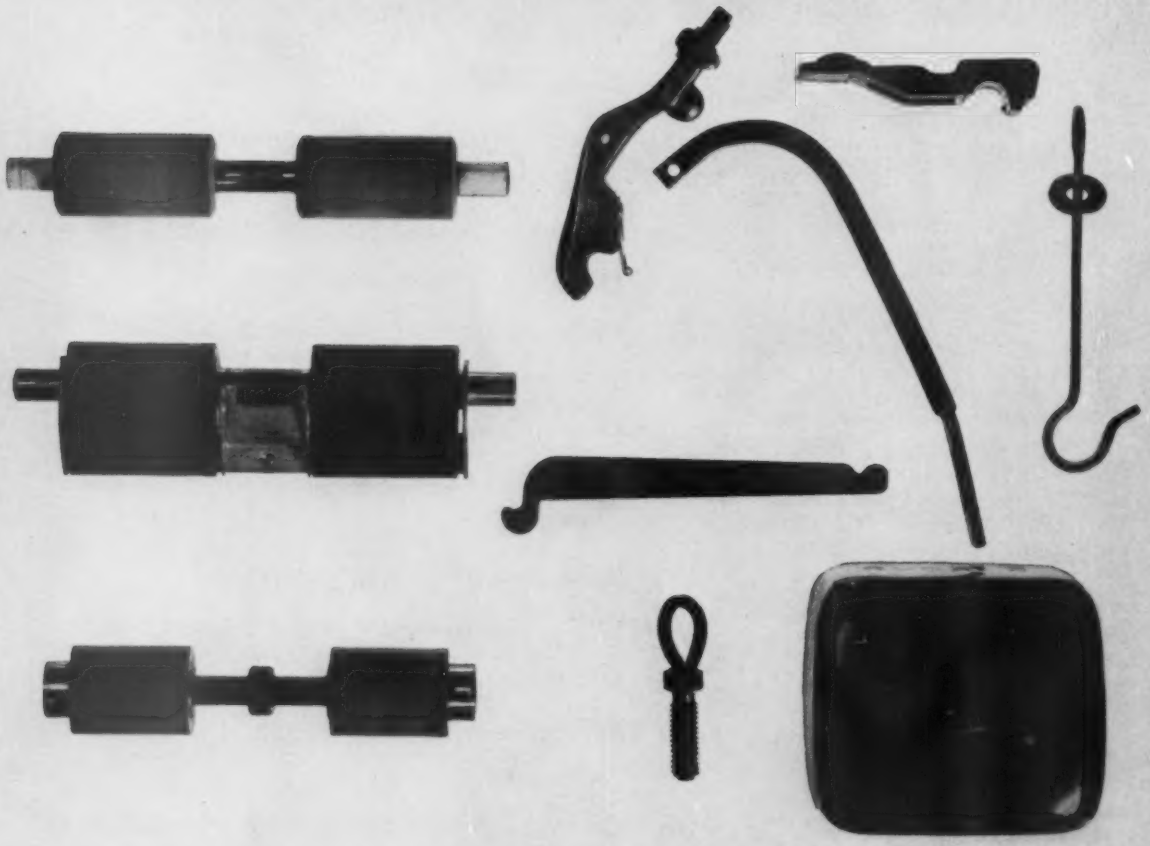
Swiss Association of Machinery Manufactures VSM
Textil Machinery Groupe
General Wille-Strasse 4, Zurich 2, Switzerland

Bär-Luchsinger - Schwanden/GL	Steel Wire Heads · Weaving Loom Frames
Benninger Ltd. - Uzwil/SG	Dyeing and Finishing Machines · Warping Mills
Bräcker Ltd. - Pfäffikon/ZH	Ring Travellers · Weaving Mails · Reed Wire
Bührle - Zurich-Oerlikon	Seamless Hose Knitting Machines
Dubied & Cie S.A. - Neuchâtel	Flat and Circular Wevenit Knitting Machines
Fischer (George) Ltd. - Schaffhausen	Automatic Bobbin Changers for Looms
Fröhlich Ltd. - Mühlehorn/GL	Heddles · Metal Frames · Droppers · Leno-Equipment
Graf & Co. - Rapperswil/SG	Card Clothing · Metallic Wire · Cardroom Machinery
Grob & Co. Ltd. - Horgen/ZH	Heddles and Frames · Leno Equipment · Droppers
Hamel (Carl) - Arbon/TG	Twisting Machinery for all Yarns
Hispano Suiza (Suisse) S.A. - Geneva	Ring Spinning and Twisting Frames · Direct Drive Spindles
Honegger & Co. - Wetzikon/ZH	Roller Bearing Spindles · Fluted Rollers
Hunziker Ltd. - Ruti/ZH	Temples for Looms
Jaeggli (Jakob) & Cie - Winterthur/ZH	Weaving Looms · Yarn-Mercerising Plants
Knitting Machine Works - Schaffhouse	V-Type Flat and Circular Knitting Machines
Lehner (Jakob) Ltd. - Siggenthal-Station/AG	Braiding Machines for Metal Wires and Textile Yarns
Loepfe Brothers Ltd. - Zurich	Optical-Electronic Bobbin Feelers
Luwa Ltd. - Zurich	Textile Air-Conditioning · Pneumafil
Maag Bros. Ltd. - Küsnacht/ZH	Cloth Room Machines · Selvedge Printers · Special Inspection Units
Mettler's Sons (Fr.) Ltd. - Arth/SZ	Winders · Doubling Winders · Singers
Müller (Jakob) - Frick/AG	Ribbon Looms · Battens · Warper for Ribbons
Peter (Konrad) - Liestal/BL	Dyeing and Finishing Machines for all Fabrics
Prematex S.A. - Morges/VD	Ring- and Uptwisters · Hank-Reeling Machines
Rieter - Winterthur/ZH	Spinning and Twisting Machinery for Cotton, Wool and Synthetic Yarns
Ruti Machinery Works Ltd. - Ruti/ZH	Textile Looms and Weaving Machinery
Saurer (Adolph) Ltd. - Arbon/TG	Weaving Looms · Embroidery Machines
Schärer Machine Works - Erlenbach/ZH	Filling Bobbin Winders for all Yarns
Schweiter Ltd. - Horgen/ZH	Automatic Pirn and Cone Winders
Spindles, Motors & Machines Ltd. - Uster/ZH	SMM Roller Bearing Spindles
Stäubli Bros. & Co. - Horgen/ZH	Cam Dobbies · Papercard-Cutting Machines
Stutz & Cie - Kempten/ZH	Bobbin-Stripping Machines
Sulzer Brothers Ltd. - Winterthur/ZH	Weaving Machines
Vollenweider (Sam.) Ltd. - Horgen/ZH	Shears · Selvedge Trimmers · Reed Cleaning Machines
Zellweger Ltd. - Uster/ZH	Preparatory Machines · Testing Equipment

Which is easier to care for...



This...

3500 less parts to oil, clean, maintain when you switch to MagneDraft Spinning Frames

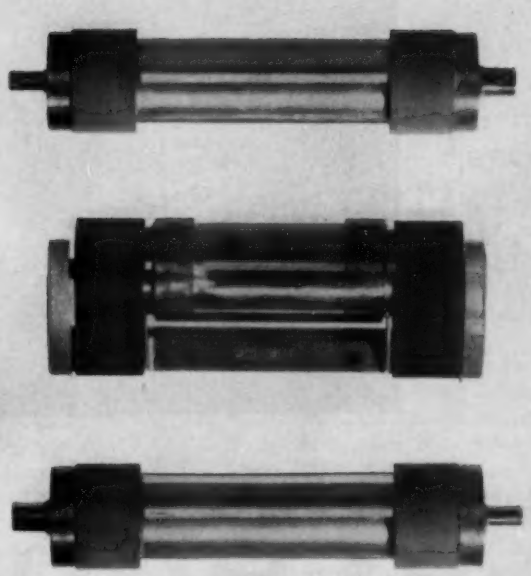
Saco-Lowell's MagneDraft* spinning system lets you replace the complicated and cumbersome drafting of conventional systems, shown above at left, with the simple 3-piece assembly, above next page.

MagneDraft's simplicity results from unvarying magnetic forces. Saddles, stirrups, levers, hooks and springs or weights are dispensed with entirely, for 7 less parts per 2 spindles... 3500 fewer parts per 1000 spindles.

With no lubrication required in the drafting zone, MagneDraft spins cleaner. Parts that do require cleaning are easily reached — for a savings, in all, of 60 to 90% of normal cleaning time.

Like all Saco-Lowell products, MagneDraft spinning systems have these two important plus values for you:

Built for Better Performance. MagneDraft creates a positive nip. The squeezing action between top and bottom rolls eliminates deflection of the bottom rolls.



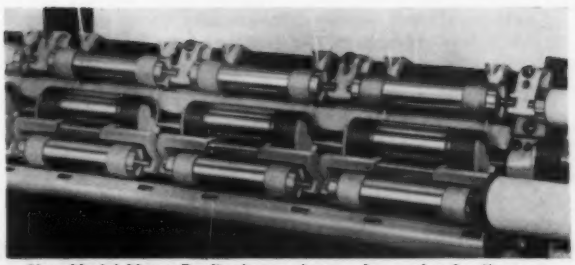
Or This?

Backed by Better Service. A staff of specially trained consultants is available to help you in planning your MagneDraft installation or change-over... to provide any data or assistance you may wish.

Already in use in mills everywhere, MagneDraft is preferred by mill personnel at every level... proving once more that in textiles, as in other fields, the simplest answer is often the best.

*U.S. Patent Number 2,686,940.

For reprints of an actual mill report on MagneDraft performance, with statistical tabulations, write Saco-Lowell Shops, Textile Machinery Division, Greenville, S. C. Or contact the Saco-Lowell sales office nearest you.



New Model MagneDraft, shown above, wins praise for the convenient end-around piecing its top front roll support permits. Available also in standard model without this feature.

SACO-LOWELL SHOPS

TEXTILE MACHINERY DIVISION

EXECUTIVE AND SALES OFFICES, GREENVILLE, S. C.

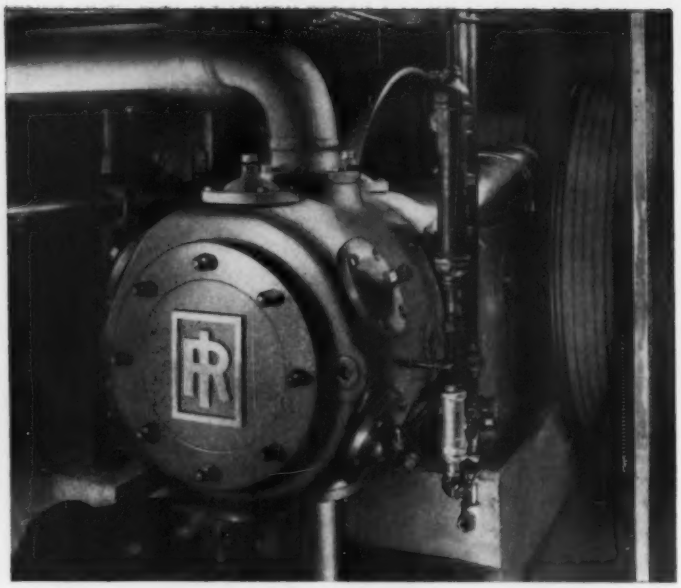
BRANCH SALES OFFICES: ATLANTA, GA., CHARLOTTE AND GREENSBORO, N. C., GREENVILLE, S. C., AND SACO, MAINE.

CIRCLE 37 ON READER SERVICE CARD

IN I-R COMPRESSORS,

TIME TELLS

THE DIFFERENCE



This I-R non-lubricated compressor has operated

34,640 HOURS

with original wear ring—and still going strong!

In July, 1950, a prominent manufacturing company purchased an Ingersoll-Rand ES-NL non-lubricated compressor to supply oil-free air for its Cincinnati plant. At this writing, the unit has operated for 34,640 hours, at an average of 70 hours per week, with the original piston and wearing ring – and it's still going strong.

The piston compression rings were changed once, during routine inspection in 1955.

It takes a special breed of compressor to withstand thousands of hours of continuous service without lubrication of any kind. It's one of the toughest jobs a machine is asked to do, and dependability is the first requirement. Of course, many different factors determine the life of non-lubricated equipment – condition of gas handled, pressures, operating practices, type of service – but you'll find that Ingersoll-Rand NL compressors have the best reputation for dependability in all kinds of jobs.

Ingersoll-Rand introduced the non-lubricated compressor principle in 1933, and today builds the widest range of types and sizes. The Ingersoll-Rand air-cushioned NL Channel Valve is the only valve designed specifically for non-lubricated operation. Ingersoll-Rand NL compressors have a number of other exclusive *Extra-Value* features, and each unit is engineered for its specific job.

You'll find that I-R is best prepared to handle your compressor requirements, with the most complete line of compressors – in reciprocating, centrifugal, rotary and ejector types. There are units from ½ to 20,000 hp, for pressures from one micron to 35,000 psi. Call your I-R man today for help on your job.

Ingersoll-Rand

126A1 11 Broadway, New York 4, N. Y.

The World's Most Comprehensive Compressor Experience

Vol. 111, No. 6, June 1961

First, Washington's Turn . . .

And Now It's Your Turn

CENTER of activity affecting the textile industry in May was Washington—in the Capitol and in the White House.

• Congress enacted a new minimum wage bill and President Kennedy quickly signed it into law.

• President Kennedy announced a seven-part proposal to strengthen the industry against competition from low-wage nations.

At first glance these two actions seem to work at cross purposes. On the one hand, the higher wage floor will make a price boost inevitable for some mill products at a time when the industry could well do without another obstacle to recovery. On the other hand, the President's proposal creates a climate favorable to the industry's quest for government help.

But take another look at these two actions:

One of them, the lift in the wage floor, is a clear challenge to mill men. It calls urgently for action to trim mill costs and thus offset higher labor costs, hold the price line, and protect profits.

If you despair of finding places to trim mill costs any more, we think you'll get some help in the article that begins on page 50. It lists some 30 soft spots you're likely to find in almost any mill's cost structure —those areas that always yield a little more when the pressure is on—those areas to which a mill management man always turns first when he hears the words, "Get your costs down." Among these soft spots—and among others that these will bring to mind—we believe you'll find help in meeting the challenge of the new minimum wage.

The other action in Washington, the President's help-textiles program, is at this writing a promise rather than a fact. To see how some mill men, some Washington officials, and some overseas textile men react to it, turn to the article that begins on page 42 of this issue.

Suppose favorable action does develop from the President's program. The basic fact remains unchanged: Upon the industry (and its individual companies) still will rest the responsibility of solving its big problems. The best of government action, whatever it may turn out to be, will do no more than create an opportunity for the industry, undistracted by the need of battling its way in Washington, to move with undivided energies against its familiar but formidable problems.

What problems are we talking about? We are talking about overproduction, obsolete or obsolescent plant and equipment, narrow profit margins, and the need for speed and breadth in process and product development, too.

• **Overproduction**—During the recent dip in textile markets some mills wisely (and with laudable self-discipline) refused to produce for the warehouse. But not enough mills took this course. Result: Inventories-to-sales ratio rose to 2.50 in March 1961 (vs. 2.05 in March 1960 and 1.90 in May 1959). Penalty: A lot of capital needlessly imprisoned in inventories and soggy prices.

Needed: Self-discipline throughout the industry, plus an eagle eye on markets and a quick reaction to every turn of the market.

• **Obsolete or obsolescent plant and equipment**—We yield to nobody in our admiration of this industry's dramatic modernization. (See our special issue on modernization, May 1961.) But that doesn't mean we're content—or that we think the industry now can rest on its oars. This industry needs a clear win over foreign competition. Victory will go to the bold—not to the timid. It will go to those who invest boldly as well as wisely in new high-efficiency machines—who don't grow fainthearted at the first dip in the business curve or the first upturn in the imports curve.

Needed: The courage and confidence to take giant steps in modernization—to outstrip by far the industry's $530*-million plant investment in* 1960.

• **Narrow profit margins**—Mill margins in the cotton textile industry, for instance, dropped from 34.12¢ per pound in March 1960 to 25.56¢ in March 1961. That's not good—and there's no reason to think other segments of the industry did much better, if as well. Somehow we're unimpressed with the industry's claim that its products now sell for less than they did 10 to 15 years ago. We'd be more impressed with a profit ratio that would enable the industry to speed modernization and broaden research.

Needed: A firm resolve to sell products at a fair profit or not to sell them at all.

• **Process and product development**—We believe an industry (the textile industry, that is) that spends less than 0.2% of sales for research and development is not buying as much future as it needs.

Needed: A clearly charted industry-wide program of research and development, including machinery, process, and product. Elimination of duplicate effort by means of more open communication within the industry. And research-and-development appropriations that will put the textile industry up where it belongs—in the bracket with those progressive industries for which imaginative, well supported research constantly charts a pattern for growth.

Action stemming from the President's program will offer the industry opportunity for solving these problems and meeting these needs. If the industry does less than its best with this opportunity, it will not deserve another opportunity as golden.

NOW *for the first time . . .*

a ring with effective distribution of either GREASE or OIL . . . .

Diamond Finish

"DUALUBE"

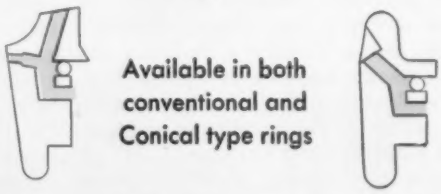
PATENT PENDING

Pressure-Lubricated Ring $\frac{43}{64}$" and up

"Dualube" conducts the lubricant 90° in each direction from the intake, and emits it at two points on opposite sides of the circumference. This is the first and only ring giving multiple distribution of both grease and oil with equal efficiency. Improved lubrication is assured, permitting . . .

HIGHER SPEEDS – LONGER TRAVELER LIFE!

Write or 'phone for details



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WHITINSVILLE (MASS.) SPINNING RING CO.

Makers of Spinning and Twister Rings since 1873

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FITS ALL SYSTEMS ALEMITE – LINCOLN

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TEXTILE WORLD

Management Bulletin

Things you should know about . . .

Investment Analysis

New filmstrip distributed by Machinery and Allied Products Institute (MAPI) gives new help to managers and supervisors responsible for figuring out payoff from new equipment investment. Particularly useful for financial people and executives, and for training purposes too, the film will help you find out rates of return, tax and revenue effects, and operating advantages. Strip costs $15 for members of MAPI and $20 for nonmembers. Orders from Machinery and Allied Products Institute, 1200 Eighteenth, N. W., Washington 6, D.C.

Industrial Ethics

Companies throughout the country are putting codes of ethics into writing, according to Purchasing Week magazine, because of recent Justice Department and Federal Trade Commission crackdowns. Typical code contents: definition of conflict of interest plus description of internal system of control to remove possibility of temptation. Checks on compliance take two forms: questionnaires filled out by key personnel, and reviews of internal controls by corporation accountants.

Employee Orientation

New booklet (from Bureau of National Affairs, Inc.) reports on current practices in new-employee orientation. Sample of contents: timing and duration of orientation; formal and informal programs; staffing the formal program; use of printed materials; follow-up; role of first-line supervisors; and evaluation and results. Thirteen-page booklet is yours for $1. Write BNA, Incorporated, 1231 24th Street, N.W., Washington, D.C.

Textile Inventories

Recently completed Department of Commerce study on industry cycles might be helpful in planning your inventory policies. Sample of contents: the textile cycle; role of inventories in business cycles; economic characteristics of the textile industry group; cotton textile production and inventories; woolen and worsted patterns; and man-made fiber inventory patterns. Ask Superintendent of Documents (Washington 25, D.C.) for a copy of "Inventories in the Textile Cycle." Price: 45¢.

Textile Computerization

International Business Machines Corporation has come out with a useful series on textile computer applications. Booklets include general information manuals on textile weaving production control, payroll and labor distribution, loom production and efficiency, inventory accounting, and finished piece-goods control. For more information, write I.B.M., Data Processing Div., 112 East Post Road, White Plains, N.Y.

TEXTILE WORLD . . . EXECUTIVE OPINION

President Kennedy on May 2 offered a seven-point program of help on the textile imports problem. How does this program look to industry leaders? Administration officials? Overseas textile manufacturers? Here's TEXTILE WORLD's exclusive roundup report on action, reaction, and the outlook for real results.

At Last, Action on Imports . . .

What the President's Program Calls For . . .

President Kennedy, facing his first major foreign trade problem, on May 2 offered a seven-point program of "adjustment assistance" to strengthen the textile industry against competition from overseas.

Here's what the President's statement did:

• **Ordered the Department of Commerce** to start an expanded research program looking for new products, processes, and markets for textiles.

• **Directed the Treasury Department** to review depreciation allowances on textile machinery with the prospect of increasing them.

• **Told the Small Business Administration** to help the industry with financing for equipment modernization.

• **Instructed the Department of Agriculture** to make recommendations on eliminating or offsetting the cost to United States mills of the difference in cotton costs between domestic and overseas textile producers. (The differential is now 6¢ per pound.)

• **Directed the State Department** to seek an early conference of the major textile-importing and -exporting nations with a view to agreement on some voluntary limits to textile exports to the United States.

• **Invited the textile industry** to petition for relief (higher tariffs or quota protection) under the Reciprocal Trade Act. The President assured the industry that this plea would be carefully considered on its merits.

• **Promised a program** of federal aid (perhaps loans or grants for retraining or otherwise readjusting employees) for industries seriously injured or threatened with injury from imports.

What TEXTILE WORLD Asked Industry Leaders . . .

On May 5, eleven days before nine textile organizations formally asked OCDM for a finding that textile imports threaten the national security, TEXTILE WORLD telegraphed some industry leaders as follows:

1. Does President Kennedy's announcement on May 2 on textile imports meet your expectations and/or industry's needs? In what ways does it meet or fail to meet them?

2. Where should industry spokesmen now direct their strongest effort in Washington? Presidency? State Department (negotiated agreements)? Commerce (research)? Treasury (depreciation)? Agriculture (research and cotton prices)? OCDM (mandatory quotas)? Elsewhere? What results do you expect from these approaches? On what time schedule?

3. Would you prefer mandatory to voluntary quotas? Why would you?

4. If action in Washington eases pressure of imports on industry, will or should the industry turn its plans and energies to solution of other problems? If so, what problems?

5. If pressure of imports eases, what are your company's plans for future self-improvement and growth?

Love: "We must recognize the ramifications in international relations."

Cheatham: "Now is the time for action to solve the problems."

Lowenstein: "Mandatory quotas cannot be subject to somebody's whim."

Stanton: "Mandatory quotas by country and category might be imposed."

Ruffin: "Much freer to spend money and make plans for self-improvement, growth."

Higgins: "Appeals for relief from export inroads will serve more than self-interest."

Comer: "Our company will look with renewed interest at even larger expenditures."

and Reaction in the Industry

"Very Heartening"

Seabury Stanton, President,
Berkshire Hathaway Inc., New Bedford, Mass.

The program proposed by President Kennedy applies to all branches of the textile industry and will undoubtedly be of substantial assistance, dealing as it does not only with the import situation, but also with other phases of the difficulties which have handicapped the industry for so many years. . .

Of particular importance are the clauses calling for action by the State Department and the Agriculture Department and the clause suggesting action by the industry under existing statutes, such as the escape clause and the national security provision of the Trade Agreements Extension Act.

Although the program does not specifically provide for mandatory quotas by countries and by categories of fabrics, which the industry has always believed necessary for complete correction of its import problems, the President opens the way for this solution if necessary by stating that an application for action under the Trade Agreements Extension Act will be carefully considered on its merits.

The industry will file such an application as soon as possible before the OCDM and, under Section 8 of the Trade Agreements Extension Act, if the director of OCDM is of the opinion that imports of textiles threaten the national security, the President is authorized to take such action as he deems necessary to adjust such imports and their derivatives.

In this manner mandatory quotas by countries and by categories might be imposed, if the State Department's efforts [in an international conference] are not successful in providing the necessary relief.

The fact that President Kennedy himself entered the meeting and personally expressed his understanding of the industry's basic problems, and his intention to aid in their solution, is very heartening.

Perusal of the President's program indicates that it includes many of the recommendations contained in the report issued by Senator Pastore as chairman of the Senate subcommittee. The industry should be very grateful to Senator Pastore, as well as to other members of the Senate and the House of Representatives, who have been so understanding of our problems and so active in our behalf.

"No Government Handouts"

J. Spencer Love, President and Chairman of the Board, Burlington Industries, Inc., Greensboro, N. C.

We believe the textile industry accepts President Kennedy's announcement as a definite forward step in arriving at reasonable solutions to the severe hardships caused by mushrooming imports of textiles and textile products. His proposals are advanced in good faith, after considerable study, and while mandatory quotas would offer a more immediate and direct solution, in all fairness we must recognize the ramifications involved in international relationships.

It is important to note that while negotiations to secure voluntary quotas are launched, our industry will not wait around to see what happens but will present specific hardship cases to the Office of Civil and Defense Mobilization. Such cases must and should receive far more friendly consideration than in the past.

The textile industry does not want government handouts. Reasonable quotas would remove the major obstacles to progress by our industry, which is more than fully capable of competing—on a reasonably equal footing as to raw materials and wages—with textile plants located anywhere in the world.

We continually develop research, appropriate capital for new equipment and necessary construction, and otherwise operate at a high level of efficiency and in the national interest. But we cannot go on indefinitely under the back-breaking strain of unlimited low-cost competition from foreign producers under completely different ground rules.

Mr. Kennedy has shown that he is concerned and intends to press for solutions to this problem. We must give President Kennedy our wholehearted cooperation in this matter.

"Highly Encouraged"

J. M. Cheatham, President,
Dundee Mills, Griffin, Ga.
and President,
American Cotton Manufacturers Institute

The representatives of the trade associations of the textile and apparel industries were highly encouraged by the President's announcement of a program of assistance to the textile products industries and the recognition of the fact that now is the time for action to solve the problems of these industries.

These representatives also stated their encouragement in the President's recognition of the vital importance of the textile products industries to the national economy. The seven-point program proposed by the President is designed to strengthen these industries, and this, the representatives feel, shows an awareness by the President of the present problems of these industries.

On behalf of all branches of these industries, we are heartened by the vast amount of attention and consideration that the President and his aides have paid to our situation.

We are also extremely grateful for the support and assistance we have had from members of the Senate and the House, the governors, and the legislatures of many states in all sections of the nation.

(The above is the statement Mr. Cheatham issued to the general press immediately following the President's announcement on May 2.)

"Direct Fire at OCDM"

Leon Lowenstein, Executive Board Chairman,
M. Lowenstein & Sons, Inc., New York

I will say the President's proposal meets the industry's requests 60%. As a matter of fact, it can be even more optimistic. From the way the Administration is handling things, they seem to understand the problem of textiles and I feel they will act in accordance with the best interests of our country.

As to where the industry should now direct its strongest effort in Washington, the matter is so important that I think the industry should contact every possible committee that has anything to do with the subject. I think they should play ball with all committees but should direct their fire to the OCDM. They should also bring pressure on the President and whoever in the Administration may be interested in this subject.

I would prefer mandatory quotas through legislation but if that is not possible then voluntary quotas would be acceptable. Mandatory quotas cannot be subject to someone's whim or subject to emotional change. However, if it is against the interests of our country to secure mandatory quotas, we should take voluntary quotas.

If action in Washington does ease the pressure from imports, then our industry, the same as any other industry in America, if it wants to be successful should be alert in this war of nerves to any good project that presents itself.

Relief from imports will lend itself not alone to expenditures for modernization but to annexation or absorption of other companies; but, more important, expansion of one's own facilities, which will increase employment and, conversely, will decrease unemployment, is of importance.

"Step in Right Direction"

Hugh Comer, Chairman of the Board,
Avondale Mills, Sylacauga, Ala.

Although the President's program is not all I would have liked, I believe it is an important step in the right direction.

Several points are of no particular interest. But I do look with favor on the possibility for more realistic depreciation and for resolving inequities in the two-price system.

Especially I find encouragement in the possibility of OCDM action. The industry plans to move ahead right away with its OCDM petition, under which import quotas are a possibility. I believe all segments of the industry should give full support to this action under the national security provision of the Trade Agreements Extension Act.

Our company has already announced plans for large expenditures for plant improvements and will look with renewed interest at even larger expenditures, given reasonable assurance that unfair imports will not drive us out of business.

"Did Meet Our Expectations"

William H. Ruffin, President,
Erwin Mills, Inc., Durham, N. C.

President Kennedy's announcement did meet our expectations reasonably, and it is my belief that such a strong case under the national security clause of the General Trade Agreements Act will be presented that the industry will be given mandatory quotas in the situation of any country that does not agree to an air-tight voluntary quota. I prefer the mandatory.

We will feel much freer to spend money and make plans for self-improvement and growth if this imports question is satisfactorily solved, which I believe will be the case.

The keeping of production in line with demand and better merchandising are two important problems to which our industry should turn its attention.

"Accelerate Modernization"

Richard R. Higgins, President,
The Kendall Co., Boston

As has been pointed out by many executives in the textile industry, more important than the seven specific suggestions that were made by the President is the fact that he showed personal recognition that the industry is a national resource that we, as a nation, must be vigilant to conserve. It is now clear, therefore, that the industry's appeals for relief from the inroads of imports will, if effective, serve more than self-interest and that the health of this important industry is vital.

It seems likely that spokesmen for the industry will now present its case to OCDM. At the same time, it is hoped that the Department of Agriculture will take steps to correct the adverse differential in raw cotton costs between foreign and domestic producers.

Although the record shows that textile companies have been taking steps to modernize their plants and equipment, President Kennedy's suggestion for increased depreciation allowance for textile machinery, if carried out effectually, can accelerate the modernization process and move the industry forward.

Over and beyond these steps, the industry must direct its attention to market and product research—to serving its customers with better values.

How Washington Reacts to the President's Program

Agriculture—"Will Consult Widely"

Secretary of Agriculture Orville L. Freeman on May 16 made the following statement to TEXTILE WORLD:

The Department of Agriculture has established an interdepartmental committee of representatives from the Foreign Agriculture Service, Agricultural Economics, Agricultural Marketing, and Commodity Stabilization with the assignment to review and recommend procedures to fulfill the President's request.

James T. Ralph, Assistant Secretary of Agriculture, is to head the review committee.

The committee, in the process of its study and review, will consult widely within the cotton industry—particularly with the National Cotton Advisory Council—to determine the various viewpoints on the problem.

Treasury—"Realistic Rules"

Assistant Secretary of the Treasury Stanley S. Surrey issued the following comment to TEXTILE WORLD on May 17:

The Treasury Department is moving vigorously under President Kennedy's directive of May 2 to develop meaningful data and realistic recommendations regarding depreciation allowances on textile machinery.

Our study is an essential part of an active survey of depreciation allowances generally, and this survey is being pushed forward to get results as soon as possible. Depreciation reform would not be precluded by adoption of the President's recommendation now before Congress for tax incentives for plant expansion and modernization. The latter incentive will be of real value to the textile industry as well as other important segments of the economy.

In carrying out our survey we are working closely with representatives of the textile industry. We are busy in the assessment of that industry's current practices and needs and the way current allowances are operating. We hope to determine at what point the allowances are thought to be deficient, and what changes would be needed to arrive at a reasonable determination of the depreciation and obsolescence factor. We know the industry believes obsolescence has increased rapidly and operating conditions have changed radically, thus outmoding old depreciation rules. Both industry and government want realistic and proper rules for the recognition of obsolescence that will be fair and equitable.

We are obtaining reliable statistical results of our depreciation survey, which will be analyzed in consultation with the industry, which in turn can provide us with facts and views upon which to base further recommendations as called for by the President.

State—"Problems That Threaten"

The State Department on May 16 declined to make an on-the-record comment on the international textile situation because of the "delicacy" of the upcoming negotiations. Here, however, is the report of McGraw-Hill's Washington News Bureau on what the State Department is thinking and doing about the President's program.

Secretary of State Dean Rusk has assigned the task of implementing the President's directive to Under Secretary George Ball. Within two weeks after the President's statement, Ball left for Europe to begin a series of consultations that the United States hopes will lead to an international voluntary agreement for an equitable distribution pattern for world textiles.

First emphasis is expected to be on persuading some Western European countries—notably West Germany—to accept a larger quantity of textiles sold by less developed countries, especially those in Asia.

Another major aspect of the negotiations is to persuade textile-manufacturing areas—especially the British colony of Hong Kong and others that have been reluctant to take part in any international voluntary

agreement—to limit their output of certain textiles if this is deemed necessary to ease the textile problems of the United Kingdom, the United States, and other countries.

United States officials are wary of predicting a high degree of success for the voluntary venture. They see the proposed international textile program as something of an innovation in diplomacy and expect to encounter a number of problems, some of which will threaten the program's concept.

Commerce—"A New Course"

Hickman Price Jr., Assistant Secretary of Commerce for Domestic Affairs, made this statement May 17 to TEXTILE WORLD:

The President's seven-point program is a plain statement of the government's intention to preserve a United States textile industry adequate to serve the needs of this country in war and peace. I am pleased at what I am convinced is its promise for the future of the industry. Those who serve it and the many whose livelihoods are connected with it now know that their government is determined not to stand idly by and witness its dissolution.

We have a new course that leads away from inequities in government programs and toward a renewed prosperity for mills and workers. Through research, conferences with other importing and exporting textile nations, and other measures that the President announced, we will move positively toward a better future for the United States textile industry.

(On Monday, May 15, Commerce released an 86-p. booklet, "Basic Research Related to New Uses for Textiles," which stakes out areas for research and suggests ways to finance it. Price, 50¢; Superintendent of Documents, Washington 25.)

What They Said About the President's Program in Japan

At the request of TEXTILE WORLD, John Yamaguchi, McGraw-Hill World News Bureauman in Tokyo, traveled to Osaka May 12. There, armed with President Kennedy's proposals and his assignment from this magazine, he sounded out attendants at the annual convention of IFCATI (International Federation of Cotton and Allied Textile Industries). Later, on May 15, Yamaguchi showed up at the ICAC (International Cotton Advisory Committee) meeting in Tokyo.

Here is Yamaguchi's report:

President Kennedy's pitch to the world's spinners on May 2 has drawn little response at the IFCATI meeting. The annual convention bypassed his proposals at its sessions. J. M. Cheatham, leader of the United States delegation, officially presented President Kennedy's seven-point program to the meeting but there was no discussion, officially or otherwise.

The convention did submit a statement to the 20th plenary meeting of ICAC (Tokyo, May 15 to 23) asking that the United States drop its double-price system for raw cotton and adopt instead a single price-system that would bring about normal functioning of future markets and assure long-term planning.

Yasuo Tawa, director-general of the All-Japan Cotton Spinners Association, told McGraw-Hill World News in Tokyo, "We are only hoping that the United States will drop its double-price system to put the world cotton market on a free and competitive basis."

Meanwhile F. Dunderley, head of the British delegation to IFCATI, said the Kennedy proposal was "sensible," noting that the British industry has suffered a loss to help industries in newly developing countries.

Alfredo Sedo, head of the Spanish IFCATI delegation, also said he personally was an advocate of solving trade problems through negotiations. But he did not elaborate on the Kennedy proposals, indicating he was not a government spokesman.

Mario Ludwig, director of IFCATI, said, "We cannot take a position pro or con on the Kennedy proposal until we discuss further the problems involved." He pointed out, however, that "our agenda has been fixed so tightly that there will be no time left to discuss the Kennedy issue at this convention."

Luigi Treccani, delegate from Italy's Alfieri of Milano, said, "It is premature yet to form one's opinion on the issue. Important as it is, we'll wait and see."

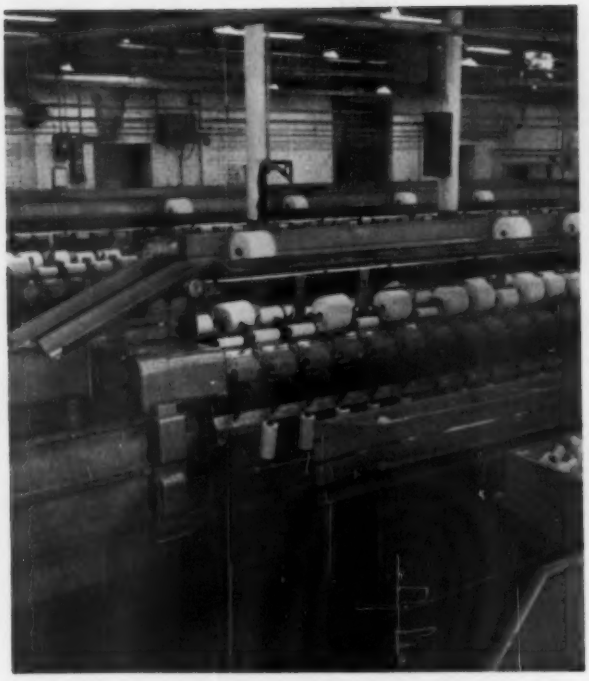
Later, in Tokyo, Dr. Ingkurt Dieterich, IFCATI president, said the international textile conference proposed by President Kennedy will produce a new order in international textile trade. But he said, "It is impossible at this time to say whether such a conference will succeed or not."

The communique issued by IFCATI at the end of its sessions in Osaka said: "IFCATI takes great interest in President Kennedy's statement, particularly his proposal to call an international conference of textile exporting and importing countries for the purpose of seeking an international understanding that will provide a basis for trade that will avoid undue disruption of established countries." It went on to say the President's proposal should be given "the most serious consideration by all the governments concerned in consultation with industry associations in the respective countries."

Referring to Southeast Asia and Hong Kong, the IFCATI statement said these countries are becoming increasingly self-sufficient, and warned that a further threat might well be present in the world market if they advanced into the export market.

Earlier, on May 8, Keiichi Matsumura, director of the Textile Bureau of the Japanese Ministry of International Trade and Industry, said Japan hopes to take part in the international conference proposed by President Kennedy. However, he said, present negotiations on cotton fabric export quotas must be continued between the United States and Japan.

BEFORE—Stored tubes and bobbins cluttered up winders, blocked overhead light from working area, collected lint, and increased the work load.



AFTER—Winders are clear and uncluttered. Tubes move away as soon as they are laid on the conveyer belt, eliminating the chance to collect lint.

Trimming Winding Cost 58%

This brand-new, home-grown (patent applied for) yarn-handling system for winders is saving one mill over $11,000 per year in indirect service-labor cost. Could be just what you need, if you're still using bobbin troughs to creel from and shelves to store cones or tubes.

WINDING COST down $11,481.60 per year.

- **Yarn quality up.**
- **Operators' work easier.**

That's what's happening in the winding department at Hickory Spinners Plant, Shuford Mills, Inc., Hickory, N. C.

How did these improvements come about?

"The answer's simple," says Shuford's Technical Service Manager, Wilson Aultman. "Necessity is the mother of invention. We wanted to use large slatted bins for creeling at the winders so we wouldn't have to store yarn in doff boxes. But there wasn't enough room. So a couple of our supervisors got their heads together and developed a full-tube conveyer system for winding. Their system (patent applied for—Editor.) has paid for itself in less than six months."

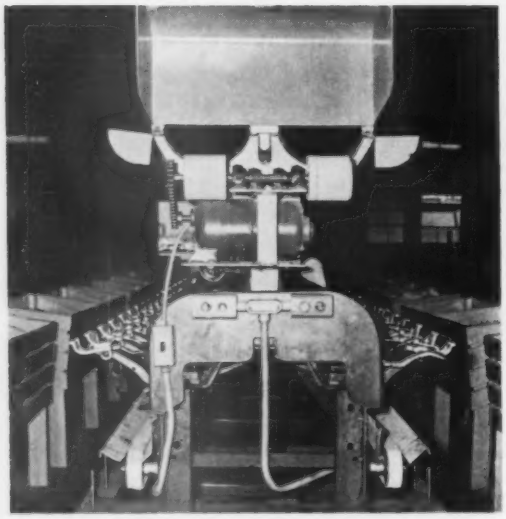
Look at the photos on these pages. You'll see that the new yarn-handling system is built around twin conveyers on the top of the winder. These belts carry the full tubes or cones to chutes at the end of the winder, where a Veeder-Root counter counts them as they slide gently into a box.

No more bins on top of the winder, where yarn formerly was stored. No more full tube or cone shelves. Bobbin bins have been replaced with slatted bins located in the aisle behind the operator instead of being attached to the machine itself.

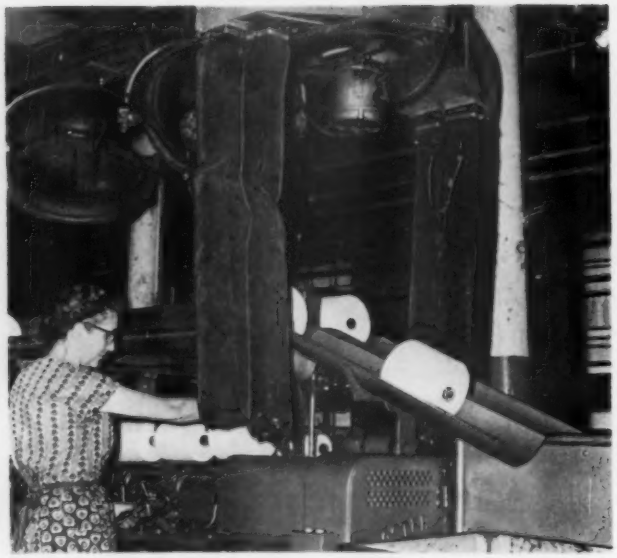
Important feature of the system:

KNOTS TIED — The job goes faster now, because of better lighting and because there's no need for a man to put up and take down yarn.

QUALITY IMPROVED — Charles Finger (right), co-inventor of conveyer, shows Mitch Creighton it's easy to find an end at creeling.



BOBBINS CONVEYED—Empties move on belts (just above the creel spindle) to boxes at opposite end.



WINDER CLEANED—Blower travels over top and working area. Quality is improved—no lint or trash on finished tubes.

TRIMMING WINDING COST 58% . . . *Begins on page 47*

a line of fluorescent lighting tubes beneath and between the twin conveyers. These tubes are directly over the work but are shielded by the conveyers so that they do not shine into the operators' eyes. New-type mountings protect the fluorescent tubes from machine vibration. These lamps put 40 foot-candles directly on the tube or cone. (Overhead lights produce only eight foot-candles at this point.) At the slub catcher, foot-candles measure 20 with the conveyer light on, five when the light is out.

Small moving belts, located just behind the supply packages, move empty bobbins to boxes at the end of the machine opposite the full-tube delivery. These twin conveyers, on top of the frame, make it possible to run two different numbers on one winder. In fact, with a few small changes made on the conveyer, four numbers can be wound on the winder.

INDIRECT LABOR CUT

Principal dollar saving in the new system is in service-labor costs. Here's a quick picture of the saving at Hickory Spinners:

The mill produces more than 125,000 pounds per week of coarse cotton yarns on a three-shift basis. An average number is 8s.

Formerly, two men were needed on each of three shifts to handle yarn supply to and from the winders. Based on $1.38 per hour (average rate), 40 hours per week, 3 shifts per day, 52 weeks per year, total cost of operation was $17,222.40.

In addition, one man was needed for one shift per day (40 hours per week) for special twister cleaning. Total cost of this job, with the same pay rate and hours of operation on a one-shift basis, amounted to $2,870.40 per year. Thus total indirect-labor cost for winding and twisting under the old system added up to $20,092.80 a year.

Today with the new yarn-handling system (on five Foster winders), only

TUBES COUNTED — Conveyer counts them, delivers them into doff box. Later each box is weighed as a double check on total output.

WELL LIGHTED—Working areas beneath conveyer belts are brightly illuminated. Fluorescent tube is covered, produces no glare.

one yarn man per shift is needed. And since these men do not have a full work assignment at the winders, the twister cleaning job has been redistributed over their three shifts. Total cost of the new supply layout—$8,611.20.

In summary:

Old system costs	
Six yarn men	$17,222.40
Twister cleaner	$2,870.40
Total indirect	$20,092.80
New system costs	
Three yarn men	$8,611.20
Reduction in payroll dollars	$11,481.60

DIRECT COSTS CUT

The new system does not offer substantial reduction in operator-labor cost. Indeed, the same number of winder operators (five) are needed. But there are savings in time required for repairing a break or creeling a bobbin. Operators today easily average 450 knots per hour, primarily because of the improved lighting system that makes it easy to locate ends.

The lighting system also is an excellent morale booster. It puts light directly on the work from a distance of about two feet, thus greatly lessening fatigue. Previously, the only light came from overhead fixtures.

Another factor that makes the operator more efficient is the elimination of outside interference. Today there's no yarn man going between her and the machine to lay up bobbins or take down tubes, and there is more working room for doffing full tubes.

The simple lines on the top of the winder make manual cleaning easier. They also make it easy to use an overhead traveling cleaner efficiently. Appearance of the room is improved—no cluttered storage bins, no shelves, on the winder.

QUALITY WAY UP

The more yarn is handled, the greater the chances of damage. This was considered in developing the conveyer system and designing it to eliminate some handling steps.

Formerly, yarn was dumped into doffer storage bins until needed, then removed from storage, put up on winder shelves, and placed on bobbin pins. Often bobbins fell to the floor and were damaged by dirt.

With the new conveyer, yarn can be moved from the spinning frames to the bobbin bins in the alleys between the winders. From here, the yarn is placed directly on the creel spindle. This system cuts out putting yarn in storage, taking it out, and putting it up on the winder shelves (to collect lint).

Lint has little chance of collecting on the tubes. As soon as they are placed on the conveyer belt they start moving toward a collector box at the end of the frame. This box fills up in short order and is moved out to the next process—twisting. The tubes are not touched by hand from the time they are placed on the conveyer belt until they are creeled at the twister.

The lighting system directly over the work permits faster and easier work and better inspection. Soft-end packages are easily spotted, and defective tubes can be quickly set aside for rewinding.

The full-tube conveyer system was developed jointly by Charles Finger, machinery-maintenance foreman at Hickory Spinners, and Jake Schoonderwoerd, personnel and standards supervisor at the time. Jenkins Metal Shops, Gastonia, N. C., has been licensed to manufacture and sell the conveyer. It is adaptable to any type of winder.

Now—right now—is the time to act on those soft spots in your mill costs. What you do about them (here are 30 soft spots to start you off) will determine whether you solve your . . .

Newest Problem: Mill Costs

THE NEW minimum wage is now the law of the land. Congress passed the bill May 3; and President Kennedy signed it into law almost at once. It is sure to hit your mill—if not directly, then indirectly—firmly, if not drastically.

Come September, for the 24-million American workers already covered by earlier laws, the present $1.00-per-hour minimum will rise to $1.15; in September 1963, to $1.25. For the 3.6-million workers newly covered, the hourly minimum becomes $1.00 in September, $1.15 in September 1964, and $1.25 in September 1965.

How hard will the new minimums hit the textile industry? How hard will they hit your plant?

Look at the two tables on the facing page:

The lower table, "Where the New Minimum Wage Will Hit the Textile Industry," comes from a study made by an informed source and generally confirmed by another. It points out that every segment of the industry will feel some direct impact. Though most of the workers directly affected (those whose wages you will have to boost under the law) are truckers, janitors, cleaners, and a few others, as the study explains, wage rises at these lowest levels will push up wages that the new law does not touch directly. That is, to maintain your present wage differentials you will have to grant comparable increases all up the line.

The upper table reflects a report by Price Waterhouse & Co., accountants, at the late-April meeting of the National Association of Hosiery Manufacturers. It shows the impact of the new wage law on just one fraction of the textile industry. If the new law hits here, it will hit elsewhere in the industry—probably your mill will suffer the effects to some degree, too.

That's why it's urgent, right now, for you to go to work on your mill costs. Somehow you must offset these rising wages—offset them quickly and surely.

What is the quickest, surest way to attack this problem? It's to look for soft spots in your mill costs—those too-familiar and too-easy-to-overlook cost makers that are sure to yield rich returns fast, and cost you the least amount in time and money.

Here—in spinning, in weaving, in dyeing and finishing—are 30 of these spots in mill costs—the places to which a mill management man first turns when the pressure is on to cut costs. Go after them hard—and you'll turn up other soft spots in the process.

Soft Spots for Cost Cuts in Yarn Making

1. THOUGHTLESS WASTE

If you don't control waste systematically, you are probably losing thousands of dollars a year.

One coarse-goods cotton mill, for example, recently overhauled its waste-control program. It found controllable waste could be reduced from 14.5% to 10.98%. Results: $52,619.82 saved the first year.

Here are ten steps you can take to reduce waste in your mill:

- **Indoctrinate** supervisors and operators with the urgency of cutting waste.
- **Post** charts that pinpoint waste created by individual departments

and the New Minimum Wage

and operators. This will keep all your people on their toes.

• **Set up** standards for permissible waste at each operation. For example, why tear off two yards of picker lap at the card if one yard is enough?

• **Install** extra spindles on your quillers to fill up partially empty bobbins. Lots of half-filled bobbins hit the waste bin.

• **Fill up** partially loaded beams instead of pulling off the yarn.

• **Have** operators report tangled yarn immediately instead of letting a frame run.

• **Co-ordinate** spinning and weaving departments to reduce excessive slasher run-outs. Minimize yardage left on each quill.

• **Make** weavers run warps out to the last round. Put only one or two picks in each thrum. Stop weaving over knots that must be cut out.

• **Reclassify** long rags as short pieces of cloth. This way, you can sell them for twice as much as rags.

• **Police** sweeps for reworkable waste. One mill is saving $10,000 a year this way.

2. TOO-COSTLY COTTON

Is your mill running a higher grade of cotton than is needed for the class of goods it is making? If it is, adjust your cleaning equipment to take out more trash without overbeating the cotton.

Sometimes you can do this by rearranging machinery or adding an extra cleaner. A denim mill, for example, lowered its cotton one grade without affecting quality by installing one low-cost machine. Savings in the first year paid for the machine many times over.

Also you can try preblending.

. . . *Turn the page*

How Labor Costs Will Rise In the Sock and Anklet Industry

Percentage Increase in Labor Costs

	At $1.15 Minimum Wage	At $1.25 Minimum Wage
Over-all labor costs	8.33%	15.25%
Direct labor costs (workers on incentive)	9.53%	17.86%
Indirect labor costs (clerical, hourly, supervisory)	6.91%	12.10%

Source: National Association of Hosiery Manufacturers

Where the New Minimum Wage Will Hit the Textile Industry

Percent of Employees on March 31, 1961 . . .

	Earning Less Than $1.15 per Hour	Earning Less Than $1.25 per Hour
Region		
Total United States	7%	19%
Northeast	5%	10%
South	8%	23%
North Central	9%	20%
Industry		
Yarn and thread	6%	25%
Broad woven goods	3%	13%
Cotton textiles	5%	16%
Man-made-fiber textiles	3%	13%
Woolen textiles	1½%	7%
Narrow fabrics	8%	22%
Knit goods	22%	38%
Dyeing, finishing	1%	4%

Work a percentage of cheaper cotton into your mix. Chances are your quality will seldom be affected. You can use weighing pans on your feeder and blend by Micronaire.

3. OUTDATED METHODS

Cycle spinning, planned doffing, and block creeling may reduce machine down time and cut costs.

Cycle spinning—One large mill increased its spinning work assignments from 12-14 to 18-24 sides (depending on yarn number, ends down, etc.) with cycle spinning. Labor savings amount to $50,000 a year, with spinners earning 10% more money.

Spinners in this mill used to piece up ends at random and do scheduled cleaning at the start of the shift. Once started, cleaning usually continued until it was finished, except for piecing up ends now and then. Today the spinner starts at the beginning of the set and goes around the sides with no backtracking. Result: less down time. This mill decided on a 20-min. cycle. Studies show the longer the cycle, the greater the economy of patrolling—but the higher the production of soft waste and gappy bobbins.

In setting up cycle spinning, consider (1) how long it takes to form a lap of dangerous size, (2) the incidence and degree of gappy bobbins, and (3) the amount of roving waste left on the bobbin when new roving is creeled in. Also remember that warp yarn takes 5 to 10% longer to piece up than filling yarn, because the ends are harder to find.

To get the most out of cycle spinning, use special cleaning operators to relieve the highly trained spinner. And remember that ends down are the big variable in calculating work assignments for this type of operation. You can't afford to change work assignments with every fluctuation in ends down. Instead, you should maintain an assigment as long as ends down stay within certain tolerances—say 10% either way. Check major yarn numbers weekly, spinning bobbin weights and yarn-number layouts weekly, and roving-bobbin weights monthly. If these checks fall outside limits, correct the substandard condition.

Planned doffing—Training and keeping doffers happy is one of management's toughest problems. Automatic doffers are not yet in wide use. Even so, today you can keep your doffer turnover low by equalizing work assignments.

Set up a control board in the spinning overseer's office showing a floor plan of the room, location and number of each frame, and number being spun on each frame. Then on a transparent overlay, mark off with a grease pencil the various blocks of frames assigned to each doffer. When a yarn number is changed, change the doffer's work assignment accordingly. Put new numbers on frames in an area where similar numbers are being made. This way you can keep work assignments equalized and get more production per man-hour than if you have different numbers scattered all over the room.

Block creeling—Some mills can cut costs with cycle doffing and block creeling. But these methods can be tricky unless you are running similar numbers and you plan your production so bobbins fill up or run out on schedule. If you don't plan, waste or partly filled bobbins may offset the gains, resulting from these methods.

4. OUTMODED EQUIPMENT

If cards need reclothing, check metallic clothing. Here you can make big savings—eliminate grinding and reduce waste. If you can't afford new clothing, maybe you can speed up carding without lowering quality. Most mills card more slowly than they need to.

Electronic controls and automatic stop motions also are big labor savers. With proper controls, one man can run the average opening room. Signal lights will save machine down time in a combing department where visibility is poor. Yardage counters and electronic stop motions are a help at warping. You can save much labor at spooling by removing the troughs and creeling directly from trucks that fit snugly against the frame.

One mill spools cheeses on dye tubes and thus cuts out back winding. Another mill reduces down time on its spoolers and eliminates oiling (twice weekly) by replacing drum bearings with sealed bearings. Still another mill, at a cost of $25, rigs a vacuum cleaner on its spooler to clean drum brushes. This attachment cuts out a lot of hand cleaning—and improves warping and weaving efficiency by reducing down time and seconds.

5. OLD-STYLE HANDLING

Almost any mill can improve its material handling. In one mill, for example, a lap conveyor between the picker and card room has cut out three lap haulers, saving the mill $10,000 a year. In another mill a battery truck pulls 48 laps on six carriers from the picker room to the cards, enabling 1 man in 4 hours to do the work that formerly required 3 men and 24 hours.

6. COSTLY CLEANING

Cleaning is a major mill problem and a major cost—especially in cotton mills. From 20 to 50% of your total labor cost probably goes for it. Though they cost money, automatic cleaners in carding, spinning, and weaving will pay out in one to three years (TEXTILE WORLD, September 1960, p. 50).

For example, a 48,000-spindle carded mill recently spent $248,000 for traveling cleaners, open creels, and end collectors in its spinning room. Savings per year, $120,000. Pay-out, two years. Work assignments, up 37%.

A 40,000-spindle combed mill saved even more. It put in traveling cleaners and end collectors for $113,000. Savings per year, $75,000. Pay-out, 1½ years. Work assignments, up 45%.

7. MISMANAGED SUPPLIES

You have a lot of money tied up in slow-moving supplies and parts that are seldom required. Yet if you run out of parts because of loose control, you will lose money and production.

One mill has licked this problem (and at the same time has cut paper shuffling 30%). Ordering-point quantities of supplies are packaged.

When the rest of the stock has been used up, the ordering-point package is broken into and new supplies are ordered.

8. WEAK MAINTENANCE

If you have a maintenance schedule, take a fresh look at it. Your overhauling interval may be too short for economy or too long for proper preventive maintenance. Do you overhaul pickers once a year or three times a year? Do you scour spinning frames once or twice a year? How often do you change spindle oil? Six months? Two years? Seldom if ever?

No two mills need the same maintenance schedule. So study your machines and maintenance people, and determine what is best for your operation—and how to do it at lowest cost.

Give preventive maintenance a try. One mill, for example, with a formal program under the plant engineer, shows these results:

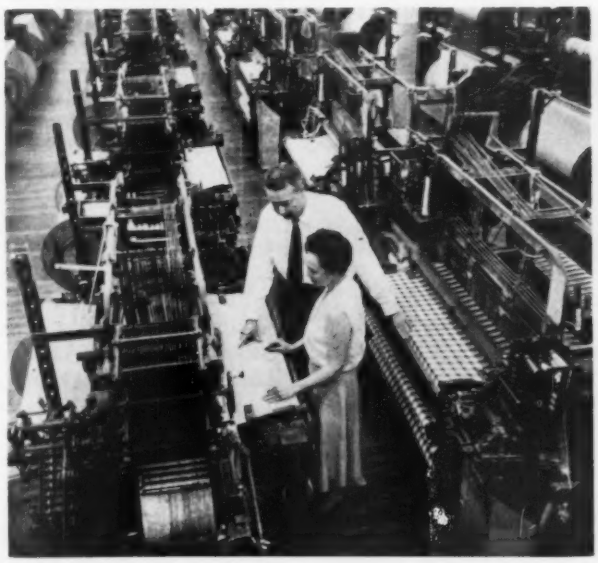
- **15% increase** in spinning-frame speed.
- **18% increase** in production per frame.
- **70% reduction** in down time due to equipment failure.
- **30% reduction** in waste.
- **50% reduction** in ends down.
- **10% cut** in repair costs (including overhauling).
- **$10,000 slash** in power cost.

Soft Spots for Cost Cuts in Weaving

"Cut my weaving costs 5%? Can't be done," most mill men would say. If that's your attitude, try taking a second look.

Look, for instance, at a new-weaveroom at an older Southern mill. It has 96 X-2 looms. Yet the only full-time employees in it are a fixer, a weaver, and a batteryhand. On part time are supervision, lubrication, cleaning, and cloth doffing. Even so, this weaveroom is running efficiently. The secret: Management keeps on probing for soft spots in weaveroom costs.

Here's a quick rundown on weaveroom soft spots:



9. LOW LOOM SPEEDS

How fast are you running? Fast as the loom manufacturer recommends? If not, you can cut costs by speeding up your looms. (The faster a loom runs, the more critical are fixing problems. So you must gear up fixers' skills as you speed up your motors.)

How much can you cut costs this way? Say you're running combed-yarn fabrics on 46-in. X-2 looms at 172 ppm. By stepping up speed to 188 ppm., you've picked up close to 10%. Best mills today maintain this speed at 97% efficiency with 1½ to 2½ seconds.

10. LOOSE ASSIGNMENTS

If you're averaging 96% loom efficiency, you'll have weavers as low as 93% and as high as 98%. Reason for the low figure often lies with the planning department.

Planning likes to lay out styles by groups, usually in consecutive loom numbers. But this isn't always best. Say you have 224 looms on one tough style of fabric in a 700-loom weaveroom. Best your weaver can do is 92 to 93% efficiency. If all looms on this style are on one weaver, your work assignments are poor. It's better to arrange the styles so that a weaver has the same number of the tough style.

11. NO LOOM STUDIES

How much are your weavers doing? What are they capable of doing? Do you make loom studies often? If you don't, you're missing a chance to cut weaveroom costs.

Concentrate your studies on the looms of (1) the weaver with highest efficiency, and (2) the one with lowest. Poor loomfixing may be the reason for your low man. Get loomfixing up to par, and you can (1) boost production, and perhaps (2) boost looms per weaver.

Suppose your loom-stop study shows that your major style of fabric has 0.11 filling stops, 0.13 warp stops, and 0.06 mechanical stops per loom hour—a total of 0.3 stops per loom hour. Take 0.5 minute to start up after a filling stop, 2 minutes for a warp break, and 0.3 minute for a mechanical stop. Thus total time for servicing one loom is 0.333 minute per hour (0.06 x 0.30 x 0.11 x 0.50 + 0.13 x 2.00). So if you assign a weaver 100 looms, he will spend 33.3 minutes per hour starting stopped looms.

These allowances are liberal for well-fixed 46-in. XD looms. They are adequate for inspection and personal time.

. . . *Turn the page*

Varying assignments from 60 to 100 looms seldom affects efficiency or quality. But you must plan the layout of sets and the styles in the sets. You'll need well-trained weavers and fixers, and supervisors who follow up.

Studies often show too much down time from smashes, warp-outs, and loom cleaning. You must correct this condition. But if you're not having much down time from these causes, you can set up new and more efficient jobloads for the men.

New time-study systems give accurate data on loom hours lost from warp, filling, and mechanical stops; smashes; warp-outs; and waiting for warps, cleaning, and loomfixers. From these data, you can compute dollar costs.

12. MAINTENANCE

Maintenance is fine. But you can overdo it. One result of too much maintenance: high parts-replacement costs. Another: parts out of adjustment that were set up correctly at first.

Don't work just to be working or you'll have too much down time while fixers are working on the loom. Often it takes a full shift to nurse a loom back to efficiency. Remember, you always have a fixer at hand. If he's trained, he can fix any loom quickly.

13. WEAK TRAINING

Don't blame your employees for doing a bad job if they don't know how to do a good job. Instead, check your training program. Many weavers and loomfixers get no training except by observing an experienced worker.

An effective training program need not cost you anything. Pick your best loomfixer and make him an instructor. Set up a loom in an out-of-the-way, quiet place. Then give a regular loomfixer two hours of instruction a week. Take the loom motion by motion, covering every major part. Soon all your looms will be set alike, all your loomfixers will work alike, and all your looms will run better.

Handle weaver training the same way, as mentioned for loomfixers.

If you want to go elaborate, use one of the new weaver-trainer methods (TEXTILE WORLD, August 1960, pp. 35-36) that analyze the job to be learned. Twelve elements are necessary for a weaver. Each element has key points (such as tying a weaver's knot and restarting a loom at a filling break). This method costs more, but the payoff in better weavers is higher.

14. LOOSE CONTROL

You won't gain much from better weavers and loomfixers if your production-control system doesn't click. How much time do you lose waiting for filling or warps? Even though you give your weavers credit for these lost picks, they aren't weaving the cloth.

Your production-control man must work ahead. When a style runs out that's to be cut out, a drawn warp should be ready—filling, too. And you must do your part to have new styles ready to run—correct take-up change gears at hand, harnesses and reeds selected and cleaned, and extra harness connectors on the spot.

15. SOFT SUPERVISION

Supervisors should check trouble spots throughout the day—too many stopped looms down too long for smashes, employees loafing on the job. There's more to supervision than keeping machines in good shape. The successful old-timers always say: "Get all you can out of everybody. Don't take excuses. Get results."

16. HANDLING LOOM PARTS

Do your looms break down because lubrication fails? Here's how to find out: Have loomfixers turn in old parts, have the parts cleaned and sorted. Check them weekly. They'll show whether you're getting proper lubrication. If you're not, change your lubrication on schedule to one that works.

Have you checked improved loom parts recently? New ones appear on catalog sheets every month. Some of them last longer, others make adjustments easier, and all of them cut fixing time and down time. At yearend they'll mean lower replacement-parts costs.

Will the new linkage parallel motions help you? Run a test on endless checkstraps against conventional ones. See whether the new shuttle checks will fit your looms. Try polyethylene pickers. Test the new synthetic covering for binders and box fronts. Try new thread cutters, new temples.

Or look at your let-offs. How much time for repairs? Many mills have gained by the newer positive let-offs. One mill, for example, increased fixers' assignments 12% by installing them and eliminating 95% of adjustments and repairs.

17. LAX SCHEDULING

Do warp-tying-machine operators get behind? Do they have to wait for warps to run out? At the start of each shift, supervisors should check for warps that will run out. They should schedule the work—two or three operators one day, only one the next day.

18. WEAK FILLING HANDLING

If you can spend money to cut costs (can you afford not to?), your best bet is one of the new systems that fill loom batteries or magazines automatically.

Short of spending money, you can slash batteryhand costs by changing to bobbins of filling prestacked in a box that's placed on the loom with bobbins positioned ready for batteryhands to place in the batteries. Two Alabama mills increased batteryhands' assignments 40% with this method without any increase in work done. Now batteryhands plug 800 to 850 bobbins per hour.

19. IMPROVING WARPS

Properly slashed warps will trim weaving costs substantially. Keep warp ends straight, hold stretch below 2%, hold moisture at 7½% on most cotton warps, and test size content often.

Use big loom beams. A 28-in.-dia. beam head holds up to 40% more yarn than a 24-in. beam. Also it will cut your warp-replacement

costs by 40%—warps last longer.

With hydraulic presser rolls you can pack on more yarn more evenly. Magazine creels save 30 to 40 minutes of down time per set.

Teflon covers on front cylinders will prevent sticking. Rubber-covered squeeze rolls will save $400 per year in replacement costs alone, plus savings in down time.

Today's multicylinder slashers pay off faster than almost any other major textile machine—as quickly as 1½ years. They also cut slasher-room payrolls in half.

Soft Spots for Cost Cuts in Dyeing and Finishing

Best cost-cutting opportunities in dyeing and finishing plants lie in two areas—equipment and supplies. Take a look at some of these familiar but often neglected soft spots in the following paragraphs.

20. POOR LUBRICATION

If bearings in your high-speed ranges are failing, you'd better study your lubrication program.

In small plants, lubrication often is left to the machine operator. Whether he takes care of his machine during working hours or on weekends, this system leaves a lot to be desired. Today's high temperatures, pressures, and speeds require expensive antifriction bearings that demand expert lubrication. These bearings need less service than plain bearings, but they must be lubricated by manufacturer's recommendations, not haphazardly.

Many medium- and larger-sized finishing plants train one man to lubricate all machines periodically. Usually the master mechanic or chief maintenance engineer schedules the lubrication and sees to it that the right lubricant for the job is available.

Costs? You'll save money over hit-and-miss methods—save in lubricants, down time, and bearing costs. Side benefits? Fewer spots from over-greasing, and elimination of weekend (overtime) greasing.

21. LAX INSPECTION

Regular inspection by qualified men is a "must" for machinery and equipment. The inspector must have authority to shut down a machine or range for small repairs.

Review machine-performance history with your maintenance chief. He probably can point out the causes of failure—and the cures.

Often in a new machine, built-in structural or design faults show up only after hard service. If inspection spots these faults early, the manufacturer is likely to make an adjustment on the machine.

A systematic maintenance program will pay for itself many times over. The hit-or-miss and "let's wait till she conks out" policies are soft spots that yield rich rewards.

22. HIGH DRYING COSTS

Drying is a big item. Every pound of water you evaporate takes from 1½ to 3 pounds of steam.

One cause of production losses and high steam costs is unsuitable or poorly maintained squeeze rolls in pads and mangles. If your plant finishes cottons or cotton-rayon fabrics, better look at your pads.

Go back to the bleach house and primary drying. The old-time mangling of bleached goods before can-drying has about disappeared. In today's continuous bleaching ranges, goods are delivered from a modern version of the old log washer directly to the scutchers and dry cans—or possibly to bins.

These new systems save time—but at a sizable increase in drying costs. Why? Water content is 65 to 70% in cottons from today's washers. From a four-roll water mangle carrying two husk and two chilled iron rolls, you come out with a 45 to 50% water content on cottons. If you're bleaching 1-million yards a week of 4-yd. goods, that's 250,000 pounds of cotton. At minimum water content of 50%, you must evaporate 125,000 pounds of water in that first drying. But if water content is 70%, your figure approaches 175,000. And steam costs are 40% higher than at the 50% water-content figure. Also, you need 40% more cans to get equal production from the wetter goods.

Multiply these figures by the losses in drying after mercerizing, dyeing, finishing, and after washing this same million yards and you see that too much water will run drying costs sky high.

How to get moisture content down to 45 to 50%? It isn't easy. The old wooden-roll log washers, husk-roll mangles, and maple-roll pads could do it, but most modern equipment can't. U.S. roll makers are working on this problem. An imported roll made of wood-fiber sheets is now used in a few plants.

. . . *Turn the page*

23. ON-OFF OPERATIONS

If your machines are in good shape, are they producing at their best level? For instance, you can increase yards per shift by converting from stop-and-go to continuous operations (if feasible) in dyeing, printing, drying, tentering, and calendering. What's needed? Continuous feeding and batching equipment, mostly.

Figure production losses, say, on a steaming tenter running goods on 1,000-yd. rolls at 80 yards per minute. Without continuous feeding and batching you're losing five minutes each time a new roll is sewed on, the finished roll is doffed, and the frame is restarted. That's 400 yards of production lost every 12 minutes; 2,000 yards every hour. At today's wages, you can't afford to get less than 4,000 yards per hour out of a machine that has a potential of 6,000.

Putting it another way, you can convert some three-shift operations to two shifts by continuous feeding and batching. Payback on equipment cost? About a year.

24. OLD-STYLE FINISHING

Cotton finishers know that good, firm nips in finishing pads speed production and give a better finish, because a hard nip drives finishes well into the fiber. So look out for those soft pads. They may be costing you money.

For some finishes the new Du Pont spraying technique promises big production gains. Moisture content on most fabrics to which the sprayed-on finish is applied runs 30 to 40%—probably as low as is practical if you want to get any finish at all on the goods.

25. WASTED WATER

Water costs money today. In plants with a natural supply it usually has to be filtered and softened. In metropolitan areas, it's even more costly—you have to buy it first, then treat it.

Boiloff, bleaching, mercerizing, dyeing, soaping, and washing ranges use rivers of water. You can use up to 70 gallons per pound of cloth in cotton bleaching, dyeing, and finishing operations.

Best way to determine when enough water is enough is to study each washing operation. Analyze your fabrics at each stage. You'll need a flow meter in the line to read quantity and a recording thermometer to show temperatures. When the analysis is right, set supply to deliver at the correct rate.

Some plants do this by constricting a supply line with a nipple. You can use flow meters to the same effect, but you have to rely on the operator to set the flow.

Savings in water bring even greater returns in steam savings if water is heated. Here again, you must analyze treated goods to find the adequate water temperature.

26. DIRTY AIR FILTERS

Most tenters, loopers, and festoon dryers have screens that remove lint from recirculated hot air. Whether your screens are removable or are the continuous-belt type, frequent and regular cleaning is crucial. If lint accumulation is great, as with spun-rayon fabrics, screens clean every 24 hours. For other goods, every three to seven days. Plugged screens will cut air flow 50%, and drying production will drop almost as much.

27. LOST BTU'S

Finishing operations are the natural enemy of the boiler house. But you can keep this hot subject on a cold-war basis.

Besides metering hot water, you can use heat exchangers to pick up heat from hot-water overflows. Today you see many more of them than 10 years ago.

What can you save with heat exchangers? It depends on waste hot-water volume and temperature.

If you are throwing away 150 gpm. of hot water, you are also throwing away the price of nearly 6,000 pounds of steam per hour. Here's a formula for your plant:

$$\frac{150 \times 8.33 \times 60 \times 64}{858} = 5{,}815 \text{ lb.}$$

steam per hour from and at 150 pounds per gallon.

Where:

150 = gpm. flow through exchanger.

8.33 = pounds of water in each gallon.

60 = minutes per hour.

64 = Btu. rise per pound of water.

858 = Btu's. as latent heat to convert one pound of water to steam at 150-lb. gage.

The rise in temperature of incoming cold water will vary with the heat in your wash water, but there are significant savings in reclaiming heat from waste hot water. Payout time for equipment? That varies —two years is about average.

28. WASTED SUPPLIES

Waste control in chemicals, dyes, and finishes can turn up real savings. Waste occurs in several forms. Wrong (or too much) material. Containers not drained or scraped; or not covered, so contents get dirty or dry out. New drums opened before old ones are used up. Obsolete dyes pushed to one side in favor of new ones.

29. UNCHECKED SUPPLIES

You can accept the chemicals used in finishing plants—salt, caustic, soda ash, chlorine, peroxide, etc. —pretty well at face value. Even so, you should check shipments, especially of chemicals that may become ineffective with age or under some storage conditions.

But chemical specialties need stiff examination. Of the several thousand penetrants, assistants, soaps, detergents, and finishes on the market, only a few are necessary for any one plant. The plant chemist must determine their value and efficiency, must work with department heads in nailing down the lost formulas.

30. OLD-STYLE FEEDS

Automatic chemical feeds through proportioning pumps or dry-chemical dispensers will bring savings of 15 to 20% over batch feeding. And they'll provide uniform product quality. For example, brine piped from central supply to point of use and metered means savings in materials and handling costs.

PRODUCTION CONTROL starts with Mill Manager Jim Vaughn placing a customer's order in a record-distribution center between hall and production areas.

PRINTED FORMS convert original order into communications for production employees so that employees are free to produce—not keep records. Five employees handle all work in the general office.

KNITTING is controlled by two forms: (1) production-control ticket and (2) set-up ticket that details each style of hosiery.

DYEING is also controlled by the form used in selecting gray stock. Quality control shows up on the master stub of the production-control ticket as redyes.

In this knitting mill production control is a . . .

Sure-Fire Profits Formula

It's a can't-miss, easy-to-manage system that keeps people busy at what they do best, thus boosts efficiency in mill, dyehouse, and office.

"A WORKING production control system in a knitting mill is the difference between a losing business and a profitable one. If you run out short on an order and have to restyle for a few dozen pairs of hosiery, you're heading for trouble because your costs skyrocket. On the other hand, if you overshoot your order and have close-outs, you're already in trouble."

These words come from J. H. Vaughn, general manager and secretary, Villa Rica Hosiery Mills, Villa Rica, Ga. And coming from Jim Vaughn, they should be a warning to every manager. Vaughn is a veteran at a tender age. He has been

Five Records That Help Set up a . . .

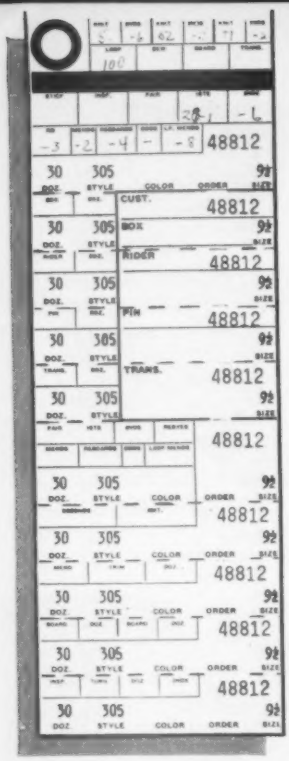
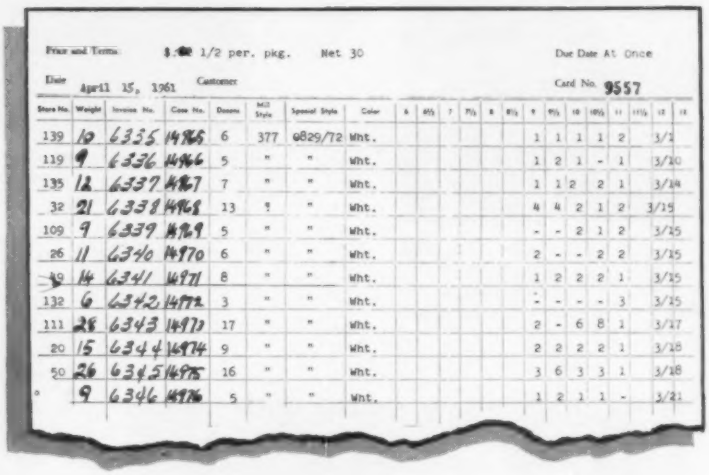


FIG. 2 CONTROL TICKET is for production, quality, and payroll.

FIG. 1 CUSTOMER ORDER is first step in production control.



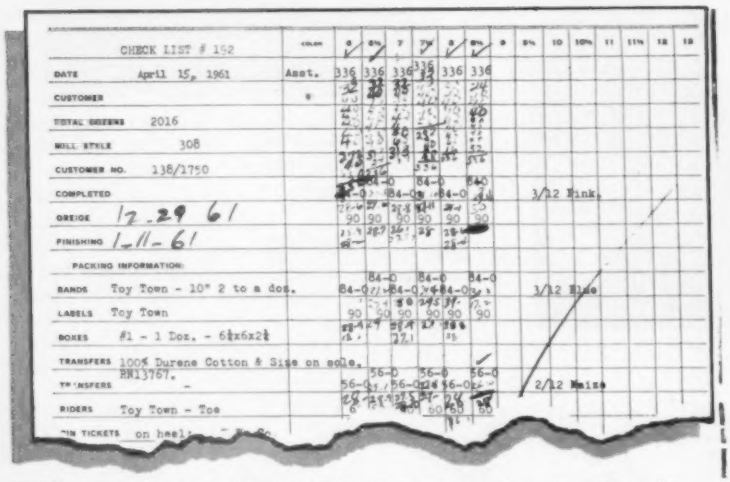


FIG. 3 PROGRESS REPORT shows status of customer's order.

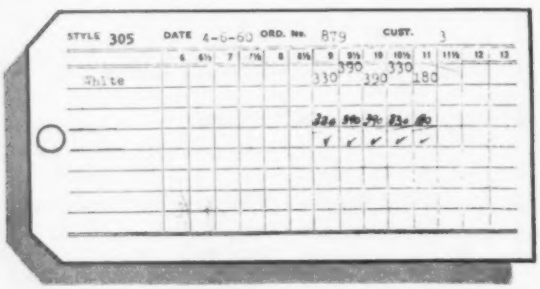


FIG. 4 DYEING TICKET selects stock to be dyed and guides dyeing.

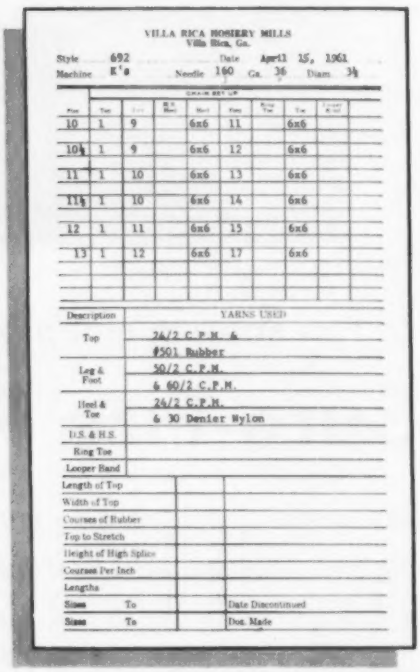

VILLA RICA HOSIERY MILLS
Villa Rica, Ga.
Style 692 Date April 15, 1961
Machine K'a Needle 160 Ga. 36 Diam. 3½
10 1 9 6x6 11 6x6
10½ 1 9 6x6 12 6x6
11 1 10 6x6 13 6x6
11½ 1 10 6x6 14 6x6
12 1 11 6x6 15 6x6
13 1 12 6x6 17 6x6
Description YARNS USED
Top 24/2 C.P.M. & #501 Rubber
Leg & Foot 50/2 C.P.M. 6 60/2 C.P.M.
Heel & Toe 24/2 C.P.M. 6 30 Denier Nylon
H.S. & H.S.
Ring Toe
Looper Band
Length of Top
Width of Top
Courses of Rubber
Top to Stretch
Height of High Splice
Courses Per Inch
Lengths
Sizes To Date Discontinued
Sizes To Doz. Made

FIG. 5 KNITTING SET-UP means accuracy for each sock style.

Sure-Fire Profits Formula . . . *Begins on page 57*

in knitting since part-time work in high school. At his own mill he's producing 14,000-doz. pairs of men's and boys' fancy socks and misses' anklets every week on 107 knitting machines. At six days per week, he can produce 19,000-doz. pairs of these socks. First quality socks are 96% of his output.

How does Vaughn describe his system? He starts by saying, "You have to draw a line on workers' real jobs. Plant employees are production workers—they are not record keepers. So all orders must originate and be completed in the office. No employee in our mill ever uses a pencil except to check or write a number."

WORKABLE BUT SIMPLE

Once Vaughn got started, there was no stopping him. Check the photographs, illustrations, and the following report, and you'll be able to see how a "workable" system really functions.

Orders for hosiery come directly to Vaughn's desk. If the orders present no unusual production difficulties, Jim takes a few steps to a hallway outside his office and drops them into the "production" file of a record-distribution center—a simple little cubbyhole in the wall between a hallway to the mill and the general office.

Eight file trays in the system are accessible from each side of the wall. Files are for the knitting superintendent, accounting, the finishing foreman, billing, the mill manager (Jim Vaughn), production, payroll, and material to be filed.

NO INTERRUPTION

With this system no one ever interrupts any office employee or plant supervisor by dropping material on a desk. Instead, it's placed in the proper file in the distribution center. And each employee has developed his own time schedule to check the file. Disruptions from unnecessary conversations have been reduced so drastically that over-all office efficiency has been improved more than 25%.

But Villa Rica is no slave shop. Far from it. There are regular coffee breaks and other recreation periods. With useless conversation eliminated, each employee can concentrate better. And employees are happy in doing a good day's work.

There are five employees in the general office—each has her specific job. Soon after Vaughn drops the day's orders into the production file in the record-distribution center, a girl picks them up and starts processing them.

WORKS THIS WAY

First the girl makes up a "customer" order (Fig. 1)—customer's name, dozens of socks to be made in size, style, and color, and date to be shipped. There's also space for the date shipment is made.

Then she makes out a production-control ticket (Fig. 2)—a combination ticket for production, payroll, and quality control. Each employee in the mill has a number. Therefore the only marks that are added to the card are pencil notations of employees' numbers and numbers of dozens of socks knitted, looped or seamed, boarded, transferred, packaged, and shipped. Stubs for each department, torn off as socks are made, are used to make up the payroll for each employee.

Stubs show first quality, second quality, redyes, mends, reboards, and looper mends for a check on hosiery quality. The master stub is returned to the general office and is used for production control and quality control.

A third form (Fig. 3) is made for each order. It shows how the order is progressing in knitting and finishing. As each dye lot is completed, the lot is posted.

A tie-on tag (Fig. 4) is for the dyehouse. It is for dyeing control only. A separate card is used for each batch of gray goods. Only things added in the office to the printed form are color and dozen in each size.

As soon as the office employee schedules an order for production, she places the production-control ticket (Fig. 2) in the "knitting superintendent's" file in the record-distribution center. The knitting superintendent picks up the ticket and takes it to the knitting machine he selects to be styled for the order written on the ticket.

EMPLOYEES IN THE KNOW

For each style of socks there's a "set-up" ticket (Fig. 5) to show knitting fixers how to knit the pattern. This ticket is also made in the office. It gives over-all sock size; size of top, leg, heel and foot; and yarns to be used in each part of the sock. Right now seven types of yarn are being used. The tickets are posted on a board by each sock style so knitters and fixers can refer to them often. Result—no chance of error.

A knitter places each lot of socks in a bag as the lot is completed. He tears a stub from the production-control ticket (Fig. 2). The payroll department uses this stub to compute his wages. The master section of the ticket is fastened to the bagged lot of socks. Then socks are looped or seamed and placed in gray-stock storage.

A gray-stock clerk schedules dyeing by the oldest stock as shown by the date. He places the dye-control form (Fig. 4) on the bag of socks. And this form shows dyehouse employees how to complete the dye lot.

CONTROL ALL THE WAY

After stock is dyed, the production-control ticket guides the order through boarding, transferring, and shipping. Then the master stub is returned to the general office for invoicing and billing.

Production-control tickets are also used for a weekly quality-control report by styles and production. Report shows even minor details like machine mends, looper mends, oil, etc., and the percentage of each. Weekly reports are posted in each department of the mill so that employees know the quality of work they are making.

Then a semiannual report is made from the weekly reports. Since this production-control system has been used, Villa Rica Hosiery Mills has increased its first-quality hosiery to 96%.

NEW BUILDING is complete except for landscaping. Plot contains 80 acres, and building is set 300 yards from the highway.

Newest Mill in the U.S.A.

It's all new: New building, new machines, new service equipment. New supervisors, new employees. New products, too. Even as you read this report, production is starting up.

SEE THE beautiful new plant in the photograph above? It's the newest textile plant in the U.S. Just this month, it's swinging into production.

And inside, it's just as beautiful as outside—clean, freshly painted, and attractive. Completely air-conditioned with humidity control, it has new machines throughout. Proof that it's a good place to work: There's a long list of applicants waiting for jobs.

This plant is at Chester, S. C. It's owned by Schlegel Mfg. Co., Rochester, N. Y. It's called Schlegel Co. Carolina, Inc. The new plant is not an example of transferring from one area to another—it's a building expansion program for an expanding product, narrow plastic webbing and auto trim laces.

Reason Schlegel built this mill in the South: To be near its source of yarn supply. The mill is going strong on polypropylene, and there are two suppliers with overnight delivery. There's also an adequate supply of cotton yarn from dyehouses in the immediate area.

Schlegel's new building contains 55,000 square feet of floor space and it costs $300,000. This building follows by only four years another new Schlegel plant at Henrietta, N. Y. This plant has 230,000 square feet of space.

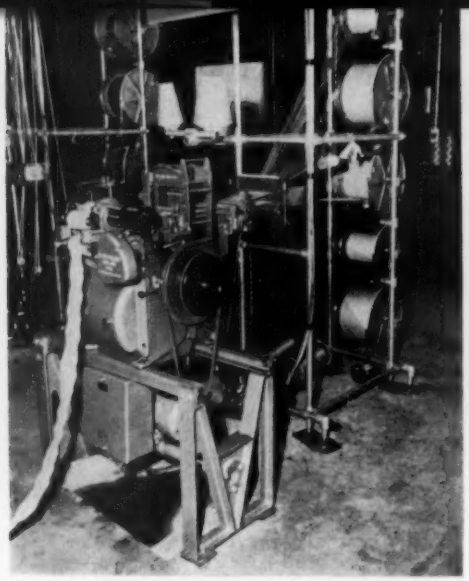
As you read this report, the last loom is being positioned and production is swinging into around-the-clock operation.

By RICHARD B. PRESSLEY
Senior Associate Editor
TEXTILE WORLD

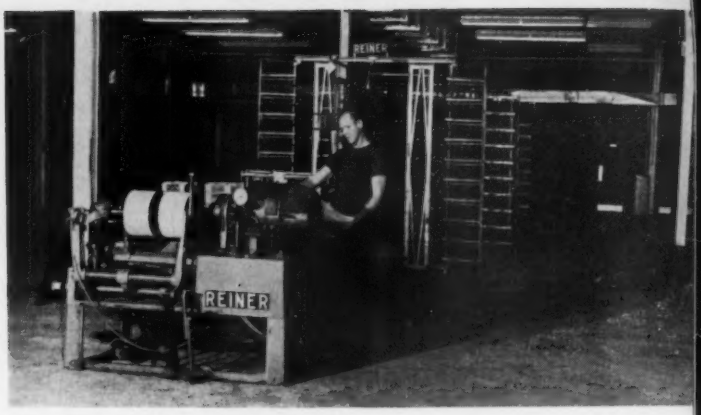
NEW MACHINES, METHODS

Just as important as production machinery is brand-new service equipment. Some recent installments in the new plant are: new packaged boiler, electrical switchgear with the newest-type bus duct, and complete air conditioning with humidity control.

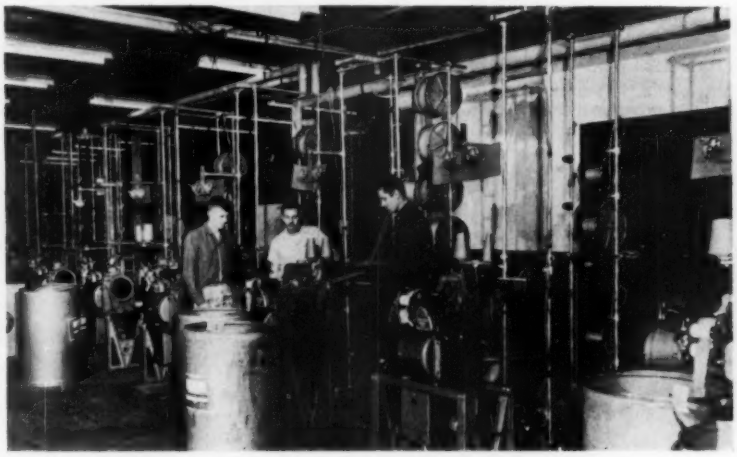
Newest methods are playing an important part in Schlegel's success at Chester—right from the start. Manager Frank R. Rochow came down from Rochester where he was plant superintendent. Prior to this job, he had been with



LOOMS are separate units, and workers can walk around each one. Filling package weighs 2½ lb. Fabrics are woven up to three inches wide.



BEAMERS adjoin yarn storage area so that there's little movement of yarn. Warps for auto fabrics are vinyl and cotton.



WORKERS manning the looms were trained in a store building in Chester (S.C.). Loom technicians (loomfixers) and loom tenders (weavers) will soon split up for around-the-clock work.

Schlegel in its sales department.

Rochow dotes on the system. He leaves absolutely nothing to chance. His assistant is Charles L. Jordan, a lean young man who is anxious to get results. Jordan has been with Schlegel since 1958 as an industrial engineer.

In addition to managing the mill, these two men will bear the brunt of Schlegel's supervision all along the line. Together, they have trained a nucleus of production workers in a short time. While the mill was being built, they set up looms in a vacant store building in Chester and laid the groundwork for a smooth-running mill. A loom technician from Rochester helped with initial training, but since then he has returned to Rochester.

NEW LOOMS, NEW PRODUCTS

Schlegel is weaving industrial narrow fabrics at Chester. End uses are automobile fabrics and lawn-furniture fabrics. Auto fabrics are vinyl and cotton. Lawn-furniture fabrics are polypropylene. Fabrics are woven up to three inches wide at 1,030 ppm.

Rochow, a graduate of Cornell University, uses his engineering skill in training new employees and in developing production methods. Ultimate loom job loads will come after exhaustive job sampling.

All present workers at Schlegel are men because the best of them will later become loom technicians (loomfixers) and supervisors.

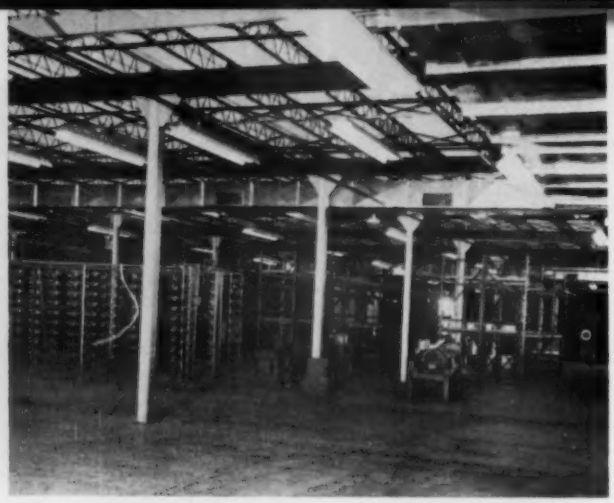
But women weavers (Schlegel calls them machine tenders) will come later. Rochow thinks that women have greater dexterity than men, and he'll use this ability to set up cycle-weaver patrols.

FINDING SUPERVISORS

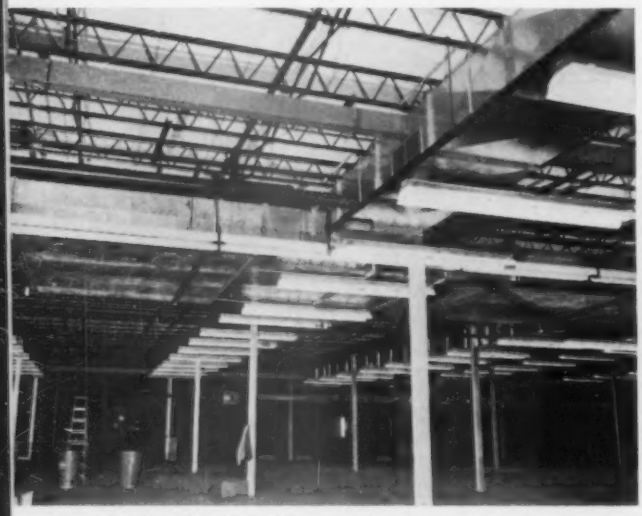
Now the job setup looks like this: Three of the present loom technicians will become supervisors, one for each shift. They'll be in charge of beaming, weaving, and finishing. For each stand of 40 looms, there will be one loom tender, one creeler, and one loom technician.

Schlegel's looms can run two tapes at once in narrow widths. Speed is over 1,000 ppm. Cones of yarn for filling yarn weigh 2½ pounds. Some types of filling yarn

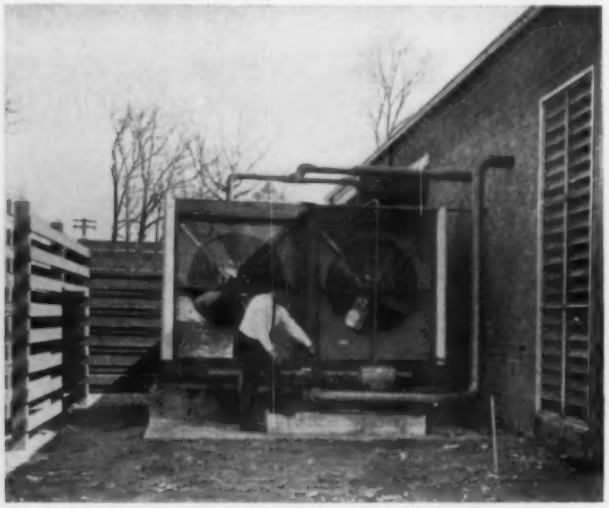
YARN IN STORAGE is accessible from all sides with a liquid-petroleum fork-lift truck. All space from floor to ceiling will be used as soon as the mill reaches full production.



SPACIOUS FLOOR AREA lends itself well to production departments. In the background is shipping. Next is the yarn storage. In the foreground is the creel and warper for beaming.



AIR CONDITIONING spans the entire production area with center ducts that branch off widthwise. Ducts also supply heat. Roof deck has a light-reflectant finish requiring no paint.



AIR-COOLING TOWER (only two feet outside the mill) has two 2-hp. fans each with a capacity of 36,000 cubic feet per minute. Fabrication is hot-dipped galvanized steel with wood fill.

NEWEST MILL IN THE U.S.A. . . . *Begins on page 60*

are run from pirns. Efficiency is expected to be 85%, gradually increasing to 95%.

Several types of new creels for beams have been developed between men at Chester and the engineering department at Rochester. But no decision has been reached on the final production creel.

FAST COMPLETION

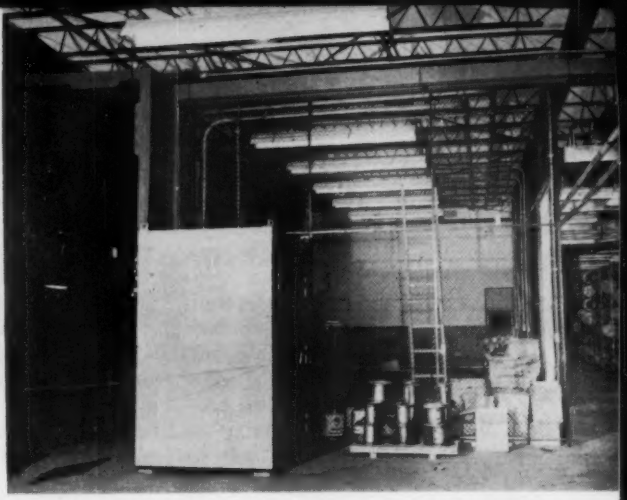
The building was completed from start to finish in only six months. Daniel Construction Co. was the builder, and John Latimer & Associates were the architects. The one-story rectangular building is 282 feet long and 182 feet wide plus offices joining near the front center. Ceilings in the mill are 14 feet high, and in the office, they're 9 feet. Plant bays are 20x30 feet.

An unusual building aspect is the installation of expansion beams in the roof. These beams run widthwise across the building and are on 30-ft. centers. The exterior surface is covered with metal flashing.

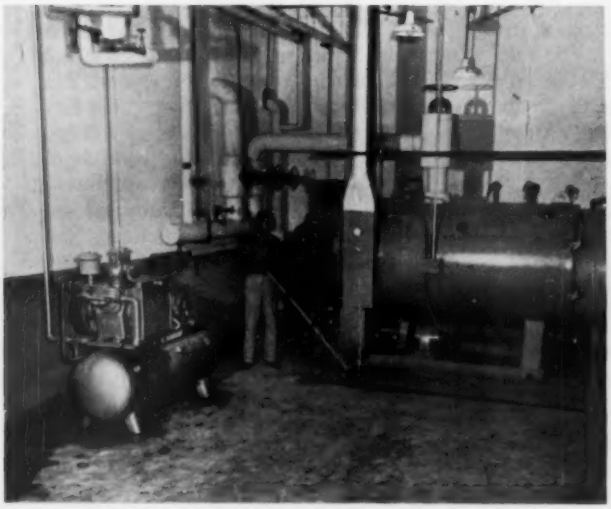
Front and end walls are jumbo brick face (3½ x 3½ x 11½ inches), backed with concrete block divided by air space, which eliminates insulation in the walls. The back wall is concrete block and is designed to be extended. Walls between the utilities and machine shop and manufacturing areas are 12-in. concrete block. Office interior and dividing walls are concrete block painted in attractive pastel shades.

Plant floors are monolithic concrete poured over compact earth, while the finish is two coats of clear Sonnomar. Office-area floors are four inches of crushed stone with Sisalkraft "Moistop" vapor barrier under the poured slab.

SUBSTATION is only 10 feet from the mill wall and is near the air-conditioning cooling tower. All interior service equipment including switchgear, boiler, and air washer are close together.



MAIN SWITCHGEAR has stationary circuit-breakers with copper busbars of 1,000 amperes. Bus duct extends throughout plant with five plug-ins on each side of each 10-ft. length.



PACKAGED BOILER is 70-hp. capacity and operates on natural gas or No. 2 oil (for stand-by service). Efficiency is + 80% at Schlegel's heating temperature of 75 F. and 65% r.h.

ATTRACTIVE OFFICES have adequate space (2,000 square feet) for all work. Frank R. Rochow, manager, is checking with his secretary, Mrs. Mary Ramsey, on her first day at work.

The roof deck is an outstanding feature of the building because the exposed surface is light reflectant and doesn't require a finish. Insulrock is tough, long, and consists of chemically treated wood fibers that are completely covered with fire- and water-resisting portland cement and bonded under pressure. The noncombustible material supports 200 psi.

The roof is 20-year-bonded pitch and felt, and the decking is coated with pitch. Then four plies of 15-lb. tarred felt were added by lapping each sheet 27½ inches over the preceding sheet. Full 27½-in. lap was mopped with pitch so that felt did not contact felt.

A uniform coating of hot pitch was applied to the exterior felt. And while it was hot, 400 pounds of gravel and 300 pounds of slag were applied to each 100 square feet of roof.

NEW BOILER, TOO

A package boiler has a capacity of 70 horsepower and operates on natural gas with No. 2 fuel oil for stand-by. A superior boiler is four-pass, horizontal, five-tube model with 5 square feet of heating surface per rated horsepower.

The insulating jacket has a 2-in. Fiberglas blanket under sectional-performed sheet-metal lagging with the water column on the right-hand side. The apparatus has tricocks, gage-glass set, gage-glass drain valve, and a water-column drain valve.

The burner is a combination-type, low-pressure, air-atomizing type for oil and high-radiant multiple-jet type for gas. The boiler operates at 80% or greater effi-

ciency over Schlegel's normal operating range. There's a 2,000-gal. underground oil-storage tank.

The plant and offices are completely air conditioned, and each has a separate air-conditioning unit.

The heating control in the plant is ±2 F. and ±4% r.h. at the control point. At the beginning of operation, the temperature will be 75 F. and relative humidity will be 65%. But these figures may vary slightly depending on operating conditions. All air-conditioning equipment is Carrier.

The cooling tower is at ground level on a 12x10-ft. concrete slab only two feet outside the mill area that houses the equipment.

Fabrication is hot-dipped galvanized steel with wood fill. There are two fans, each with a capacity of 36,000 cubic feet per minute. The water make-up line to the equipment room is ¾ inch in diameter. The line has a stop and waste valve in the equipment room. The water makeup line terminates in a 1-in. gate valve in the equipment and boiler rooms.

The air washer has a net face area of 124 square feet, and capacity is 74,400 cubic feet per minute. Spray nozzles handle 620 gallons per minute, and flooding nozzles have a capacity of 52 gallons per minute. The spray-header piping has a pumping head of 80 feet.

Suction screens are fine-mesh bronze wire, installed double thickness, and extend the full width of the tank. Inlet baffles are 24-gage galvanized steel. Blades are spaced on 3-in. centers. Six stainless-steel bin eliminators are on 1⅛-in. centers.

In the center, there's a cast-aluminum access door with an inspection glass. There's a marine light inside for visual inspection of spray-nozzle operation. The entire washer is insulated. The suction part of the tank has a steam ejector with a capacity of 300 pounds of steam per hour.

A chilled-water pump has a capacity of 672 gallons per minute when it's operating at a head of 120 feet. It can be either: single-suction, single-stage at 1,750 rpm; or double-suction, single-stage with split horizontal casing. The pump has a 20-hp. motor and is bronze fitted.

The recirculating condenser-water pump has a capacity of 357 gallons per minute delivered against a total head of 90 feet. Specifications are the same as for the chilled-water pump, but it has only a 10-hp. motor.

The reciprocating water-cooling machine is the flooded type with refrigerant in the shell surrounding the tubes with the cooling water flowing through them. The cooler is insulated with a 2-in. layer of rock cork covered with sheet metal.

Control of the refrigerant is the liquid-level type with a float valve completely adjustable to the level. A hand-set expansion valve in the control is piped in series with the pilot valve.

The cooler also has a solenoid valve and oil-return line from the bottom of the cooler to the bottom of the suction loop of the cooler.

The condenser is 125-ton capacity when operating with 357 gallons per minute of 85 F. entering water.

The chiller is designed for 375 gallons per minute and cools from 54 to 46 F. The cooler pressure drop is below 18 psi., and the condenser pressure drop is below 7.1.

The chiller is piped for complete by-pass during winter operation and with adjustable by-pass during summer. The compressor has a 125-hp., direct-connected motor with increment-type starter.

CONDITIONING THE OFFICE

Office air conditioning is a direct-expansion, fan-coil unit with a capacity of 4,000 cubic feet per minute. The motor is 2 horsepower. cooling coil is direct expansion, three rows with a net face area of 10.7 square feet.

The heating coil is a two-row, nonfreeze steam unit with a net free area of 7.6 square feet. Filters are the throw-away type with 13.3 square feet of area. Cooling coils have a total capacity of 125,000 Btu. per hour and 85,000 Btu. per hour of room sensible-heat capacity.

The air cooled condensing unit has a total capacity of 125,000 Btu. per hour when operating at 95 F. ambient condenser temperature. Compressor input is below 11.9 kw.

The air-cooled condenser fan has a capacity of 7,380 cubic feet per minute and is driven by a 2-hp. motor. The condenser coil has five rows with a net face area of 120 square feet. Subcooling coil has five rows and 1.8 square feet.

There are two steam coils in the plant. Each coil has a net face area of 5 square feet and is in two rows with four fins per inch. Coils are nonfreeze construction.

Exhaust fans are in the main plant, boiler room, and men's and women's toilets. The plant fan has a capacity of 8,000 cubic feet per minute and is driven by a 3-hp. motor. Toilet fans are centrifugal roof exhausters with a capacity of 810 cubic feet per minute. and are powered by 1/6-hp. motor. The boiler-room fan moves 2,500 cubic feet per minute, and has a ½-hp. motor.

NEW ELECTRICAL GEAR

The main incoming power service is 480 volts with three-phase, three wires. Low-impedance incoming duct has transformer tap-off.

The main incoming switchgear has a stretcher steel cabinet and is free standing. Copper bus bars are 1,000 ampere per square inch. Stationary-type circuit breakers are I.T.B., type K-600. Complete bus work is provided on line and load side for future feeder circuit protectors. Schlegel picks up at the utility company transformer. Plant machines are powered by 208 volts.

Bus duct throughout the plant is standard 10-ft. lengths with five plug-ins on each side.

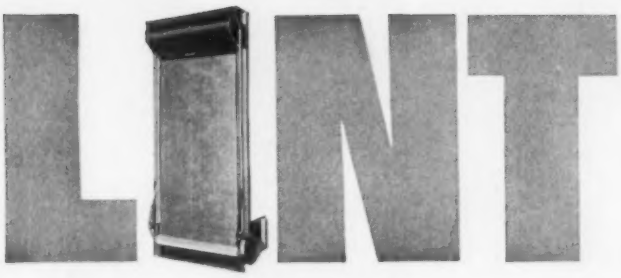
Lighting fixtures in the plant are two-tube industrial fluorescents with 10% upward component. Lamps over machines are eight feet long and provide 55 foot-candles. Lamps over aisles are four feet long. Reflectors are vitreous porcelain and are mounted by chains. All lights outside the mill are controlled from a time switch.

Some Auto-AIRMAT Installations

ALICE MANUFACTURING COMPANY
Eljean Plant
Foster Plant

CONE MILLS stops

AMAZON COTTON MILLS
BERKELEY MILLS
BURLINGTON INDUSTRIES
Batesburg Plant
Sydney Blumenthal Company
Cascade Weaving Plant
Franklinton Weave Plant
Love Plant
Martel-Henrietta Group
Mays Plant
Mooresville Mills
Peerless Woolen Mills
Tifton Plant
Piedmont Heights Plant
Ranlo Manufacturing Company
CLINTON COTTON MILLS
CLYDE FABRICS
CONSOLIDATED TRIMMINGS COMPANY
CROSS COTTON MILLS
DYERSBURG COTTON PRODUCTS
FEDERAL SPINNING COMPANY
GAFFNEY MANUFACTURING COMPANY
GREENWOOD MILLS
GROVES THREAD COMPANY
HABERSHAM MILLS
HIGHLAND COTTON MILLS
HOLT-WILLIAMSON COMPANY
JOHNSON MANUFACTURING COMPANY
JUDSON MILLS
LYDIA COTTON MILLS
MADISON THROWING COMPANY
MONARCH MILLS
Lockhart Plant
Monarch Plant
NATIONAL SPINNING COMPANY
NEW CAROLINA BLOUSE COMPANY
NEWS & COURIER
PACOLET MANUFACTURING COMPANY
Mill No. 4
Mill No. 5
Mill No. 6
PARKDALE MILLS
SPINNERS PROCESSING COMPANY
SPRINGS COTTON MILLS
J. P. STEVENS & COMPANY
Apalche Plant
Bandanna Plant
Rosemary Plant
Seneca Plant
Tuxedo Plant
Utica Mohawk Plant
Victor Plant
Whitmire Plant
U. S. FIBER LABORATORY
Sirrine Hall
WISCASSETT MILLS



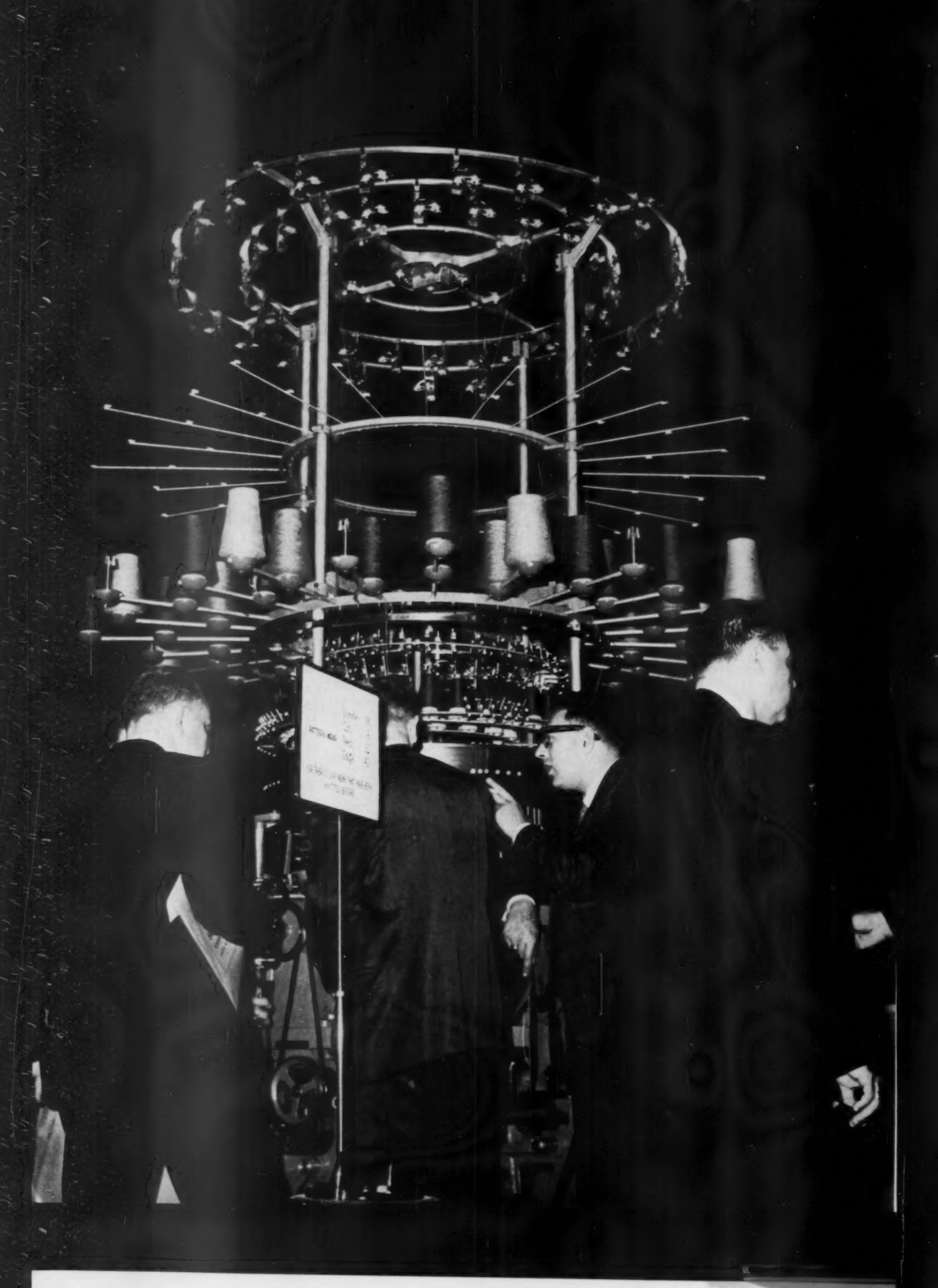
with AAF's Auto–AIRMAT lint filter

AAF's Auto-AIRMAT filter removes lint fibers from the air and cleans itself automatically–all at the same time! That's why airborne lint is no problem at Cone Mills' modern White Oak plant at Greensboro, North Carolina. Here, Auto-AIRMAT filters supply more than a million cfm of clean, lint-free air to the Mill's 15 air-conditioning systems.

Low-cost AIRMAT filtering media, installed in a continuous roll at the top, moves automatically down the face of the unit, collecting lint and dust all the way. And the Auto-AIRMAT wraps the collected material in a roll at the bottom of the filter for easy disposal. Maintenance: simply change rolls–as easy as changing film in a camera.

If you've got a lint problem, investigate the lint filter –AAF's Auto-AIRMAT. Call your local American Air Filter representative, or write direct for Bulletin 234. Address: Mr. Robert Moore, American Air Filter Company, Inc., 304 Central Avenue, Louisville, Kentucky.

AAF American Air Filter
BETTER AIR IS OUR BUSINESS



TEXTILE WORLD . . . Show Report

Best Knitting Show Yet

And here's your report on the show's highlights . . . the color . . . the fascinating new machines . . . the buoyant confidence of mill men . . . the trends and developments that soon will be hitting your mill.

BEST SHOW yet. Best Knitting Arts Exhibition, that is. So said many a veteran knitting man and many a machine manufacturer and supplier who walked the aisles of Convention Hall in Atlantic City the end of April.

Take one executive, for example. After making the rounds at the show he said, "If a man wants to stay modern and make a profit, the products are here to do it with."

How come such a good opinion of the show? Here's what mill men saw and sensed:

- **Versatile machines.** Today these machines are a giant step ahead of what mill men saw at the same show two years ago.
- **High machine speeds.** But no sacrifice of quality.
- **Bright colors,** fresh styles, new knit fabrics.
- **Sophisticated instrumentation** for process and quality control.
- **A "buy now" mood** among mill men, replacing their recent wait-and-see attitude. Indeed, there was an air of urgency at the show—urgency about getting costs down, about offsetting possible wage increases with higher production speeds, about boosting output per man-hour, about lifting and insuring quality. Result: lively sales right on the show floor.
- **A buoyant confidence** that the textile cycle has begun its upswing.

Take these last two points:

A textile consultant, keen observer of the industry and its economy, said: "The industry already has turned the corner. The pickup will continue through this second quarter, and the second half of the year will bring flourishing business."

A mill executive, replying to an exhibitor who was reluctant to sell a display model right off the floor, said: "I don't care whether you sell me this one or another one, and I don't care if you haven't yet firmed down on price. I want that machine—and I want it soon. Take my order now, and leave the contract price open until you settle on your price."

A supplier said: "Every indicator we see tells us the industry is on the upswing."

A machine maker said: "We sold 24 machines 30 days before the show opened. We'll do a lot more business right here before it's over."

Over-all conclusion on the business outlook: Volume is increasing, though mill profits are still lagging somewhat. Many late rush orders came in for spring. The predicted fall pickup could make 1961 a really big year for knitters—and for their suppliers and equipment makers.

HITTING HIGH SPOTS

For a detailed review of what was new at the Atlantic City show—new since the Knitting Arts Exhibition two years ago—turn to page 136 of this issue of TEXTILE WORLD. There you'll find the first of two installments (the second installment will follow in the July issue) of our report from the big show at Atlantic City.

Here are the highlights:

More laminates — These were stars at the show. They turned up in a wide range of garments—rainwear, vests, skirts, sweaters, knit suits, neckties, coats, and even satin linings for men's and women's coats. Most of the displays involved knitted fabrics, but a few showed woven fabrics as well. General feeling: Apparel is only a starter. Soon laminates will burst out in other fields as well.

New hosiery machines—Four-feed seamless-hosiery machines appeared for the first time in the United States. These, the machine makers predicted, may soon replace the two-feed machines that only recently supplanted single-feed machines in efficiency.

One of the makers of the four-feed machines had planned to display his unit only as a showpiece, thinking it might not produce the kind of hosiery that would be acceptable in the American market. But, noting the heavy interest of U. S. hosiery men in his machine, he changed his mind before the end of the second day of the show and began talking turkey with the callers at his booth. One caller was so interested in the machine that he took a just-knitted stocking and had it trimmed, sewn, boarded—dyed right on the floor.

Meanwhile, though single-feed machines still outnumber two-feed units in the hosiery industry, ma-

chine makers report they are backlogged well through the rest of 1961 with orders for two-feed units.

Progress in circular knitting—Key word at Atlantic City was versatility. As one observer said: "Look at what you can do with that machine—wale strips and course strips, in any width of strip and with four different colors per feed." "What's more, new-type pattern wheels provide pattern sizes three times as big as those in previous units."

In the mind of at least one mill man, versatility gets the nod over production speed when it comes to selecting equipment. This man, a producer of men's hosiery, put it this way: "Sure, I can buy a multifeed machine that will produce up to 15 dozen a day—one that will give me the latest in overplaids and styling techniques. But I'm inclined to stick with my single-feed machine at 10 dozen a day. Why? Because on my single-feed machine I can change styles in hours rather than days, and because it requires less maintenance and works through a production day with fewer stops."

One big eyecatcher: a machine that makes 72-in.-dia. paper scrim backing for carpets, plus other wide fabrics, in many patterns.

Forward with flatbed knitting—Dozens of new knitting machines of this kind bowed in at the Atlantic City show. What set them apart from flatbed machines at all of the earlier shows? These new machines featured more feeds, greater versatility, and more sophisticated instruments and controls.

Why this upsurge in flatbed machines? Because today's outerwear market leans heavily to bulky and coarse-gage fabrics. Because the market demands a wider range of styles. And because the burgeoning market in knit outerwear, with swift style changes, demands many flatbed products—collars, cuffs, sleeves, and trimmings.

On the minus side, some mill men expressed concern over somewhat lower speeds on flatbed machines—and the lower production resulting from lower speeds. Offsetting this possible loss is the fact that the new flatbeds can make a higher-priced garment and that they require less maintenance than the old models.

DYEING AND FINISHING

If you count the men who stopped to peer and ask questions, new automatic boarding machines for finishing and dyeing hosiery were among the pacesetters at the show. One example of this type of equipment: a duplex machine (two machines in one) that does what formerly required 10 machines, uses only 20% as much floor space, and needs only 4 people (working as two pairs) compared with 12.

Another example of the trend to make one machine do the work of two or more was a combination washer-extractor. But even its manufacturer issued a word of caution: "Better think twice before you buy. Purpose of washing is to soften the fabric—give your fabric the proper hand. But with a combination machine your fabric is out of the solution half of the time. This way, you don't get the best hand."

One more attention-getter in the dyeing and finishing field was a pressurized, continuous rope-dyeing machine. Otherwise, there wasn't a great deal that was new at the show. Reason: Few knitters are also spinners, and most knitters buy their yarn already dyed.

CONTROLS ALL OVER

Instruments and controls more and more are taking decision-making away from employees.

Take finishing machines, for instance. Controls of those were centralized and neatly packaged—looked almost like those in the cockpit of a commercial airliner. They're designed to monitor temperature, control roll pressures, keep fabric just so wet or just so dry, enable one employee to do the work of two or more, and guard employees from danger.

Or take one of the tricot machines on display. It was equipped with an electronic scanner that stops the machines and rings a bell if even one filament of a multifilament man-made fiber is broken.

Or take seamless hosiery. A new machine at the show reduces inspection, pairing, and counting to a single operation, thus combining lower cost with better quality.

Packaging, too—New machines and new materials for packaging stopped mill men in their tracks at the show. One machine, fed by a girl, was packaging and sealing up to 1,600 garments per hour. And a packaging-machine manufacturer reported that there has been more progress in packaging equipment, materials, and methods in the last three years than in 200 years preceding. Polypropylene, for example, holds promise of packaging advances in speed, security, and beauty.

Speaking of packaging, a knitting executive from Australia, touring the booths, said he saw little or no difference between the machines and methods in his own mill and those at Atlantic City. But he did see a vast superiority in American packaging, and he saw this difference as one of the big challenges he must face back in Australia.

MONEY AND TRAVEL

If square footage of booth space is a measure, the men who provide capital for machinery and modernization still see the textile industry as a lively client. The major financing corporations and equipment-leasing firms were out in full force at Atlantic City.

Also present were the overseas manufacturers. A good guesser in such matters estimated that display space for machines made overseas came to about 25% of the total space. And there were lots of mill men from overseas who came to look at these machines. They came from Australia, Africa, South America, Japan, and Formosa, to mention a few faraway places. They added color and glamor to an already colorful, glamorous show.

For Installment 1 of TEXTILE WORLD's report on new equipment at the Knitting Arts Exhibition, turn to page 136. Installment 2 will appear in July.

Producing Better Yarn

Georgia Textile Operating Executives investigated, analyzed, and criticized the latest machinery and techniques for carding and spinning at their spring meeting in Atlanta. Here's what they talked about.

SOME GEORGIA mills report that 1960 cotton is better than 1959 cotton. They say strength, appearance, and Micronaire values are up, neps down. Other mills, not faring so well, complain that quality factors are generally worse than for the previous crop. Two mills report Micronaire values vary too much. All mills say Micronaire values are higher.

Best machines for removing cotton stalk or bark from machine-picked cotton are combinations of Superior and Axi-Flo cleaners. In one mill, improved grid bars in the Superior cleaner increased cleaning effectiveness 50%. Another mill gets good results from Centennial feed hoppers equipped with aerators and feeding to a Southern Regional Research Laboratory opener-blender.

Two mills report that the new SRRL opener-blender gives better cleaning and blending than older machines. But a third mill is not happy with the amount of fine trash removed by their machine.

Reporting mills unanimously assert that automatic weighing mechanisms on blending feeders improve the blending operation. Reasons: The element of human error is eliminated, and more exact percentages of fiber are put in the mix.

Use of the Long pneumatic lap control system has enabled many mills to increase lap weights from 40-50 to 70-80 pounds. One mill jumped its lap weight from 52 to 98 pounds. In this instance, picker production increased 11% and lap waste was reduced 40%. An electric hoist is used for doffing.

Consensus is that pneumatic lap controls definitely increase efficiency and production and also reduce waste at the cards. Chief problem: Most mills have had to beef-up their picker calender-roll sections by installing solid steel rolls and gearing to handle the increased load.

CARDING—NEPS DOWN

Several new types of hardened flat clothing—split top, short cut, and metallic—are used by Georgia mills.

Split top produces fewer neps in some mills, short cut in others. For example, the split-top material gives one mill 19% fewer neps, and grinding interval is increased from 15 to 90 days. A second mill reports 18% fewer neps and 21% less flat strips. Still another mill prefers the short-cut type, which has reduced flat strips 20%.

Eighteen mills, carding from 7 to 15 pounds per hour, gave their experience with metallic card clothing. Cottons that were used range from $1\frac{1}{8}$- to $1\frac{1}{32}$-inch staple and SLM to M grade. All mills report a reduction in neps—from 10 to 66%. A few mills say production is up, as much as 25% in some instances.

Metallic clothing in many Georgia mills has reduced flat strips 15 to 33%, but more fly is frequently produced. Where man-made fiber is processed, cylinder and doffer strips are completely eliminated and no increase in fly is apparent.

About half the mills bolt down feed rolls. A few use spring weighting. Chokes cause some trouble. Here are a few remedies: Stop the card and remove chokes . . . put antichoke whiskers and rubber fins on doffer and cylinder . . . check for selvage chokes every eight hours . . . keep spacing even and correct between cylinder and sides . . . maintain accurate screen settings (frequent cleaning is the only answer).

Typical Settings (in inches)
For a Mill Using Metallic Card Clothing

Lap guides	39.25	**Lickerin**	
Back plate		Feed plate	0.010
Lower edge	0.022	Cylinder	0.007
Upper edge	0.017	Screen (back)	0.032
Flat edge	0.010	Screen (front)	0.032
Flat stripping comb	0.015	Bars	0.032
Front knife plate	0.017	Nose	0.200
Doffer to cylinder	0.005		
Comb to doffer	0.022		
Cylinder screen		**Mote knives**	
Front	0.175	Bottom	0.010
Middle	0.046	Top	0.012
Back	0.017	Angle (degrees)	18

DRAWING—SPEEDS HIGHER

About 75% of the mills have drawing frames equipped with cushion-type rolls. The remainder have metallic rolls. Speed ranges from 275 to 600 feet per minute, with the average being about 400 feet per minute. Frames have from four to eight deliveries, and sliver ranges from 55 to 65 grains in weight. Nearly all mills have gone to large cans with 15- to 18-in. diameters. Frame efficiency is 58 to 70%. Uster variation is 1.30 to 3.75%. Most mills have little trouble with the

higher-speed drawing, but a few complain of excessive roller laps and shedding. These are minor problems that the mills will soon correct.

COMBING—NOILS DOWN

Use of the Eureka half lap on combers in one mill has reduced noils 20%, and life expectancy of the device is twice that of conventional half laps. Another mill has eliminated static at the draw box by increasing temperature and humidity and by installing hard cots on the top rolls. Temperature in most comber departments is 80 to 90 F., and relative humidity is 50 to 58%. Pressure on lap racks runs 30 to 40 pounds, and there is little trouble from lap splitting.

ROVING—BOBBINS BIGGER

Mills using the Vari-Pitch roving-frame builder are getting from 5 to 23% more roving on the bobbin. But about half the mills report 30 to 100% increase in tangled roving. The others say the amount of tangled roving is constant.

Some mills find that revolving clearers on roving frames keep rolls cleaner. Other mills find the flat clearer is more efficient. Most mills report little trouble from roll laps.

High-speed flyers (921 rpm.) are being successfully used in one mill and give no more trouble than conventional flyers. In another plant, overhead cleaners are saving 10% in labor cost because of rearranged job loads and cleaning cycles.

SPINNING—MORE SPEED

Traveling floor cleaners have reduced manual sweeping in some Georgia mills as much as 50%. Maintenance varies from practically none to an excessive amount. Most mills say that there is some interference with spinners and traffic. One mill is having a tough time because of 29-in. alleys and 27-in. boxes. Another mill is very pleased with the automatic emptying system which "has worked perfectly so far with no maintenance cost at all."

Mills with Duo-Roth drafting generally prefer 0.040-in. synthetic aprons. But one mill likes 0.032-in. aprons, and another finds 0.050-in. aprons give best results. Apron life ranges from 18 to 36 months. Average is about two years. A few mills report that aprons begin to crack after several months of usage. Aprons are cleaned by blowing off, washing, or picking by hand.

Piedmont spinning frames are giving satisfactory service in most localities. On 2½- and 3-in. rings, traveler speed ranges from 5,200 to 8,200 feet per minute. Not one of the mills reports trouble with yarn ridging. Two have had collars to break. Both one and two balloon control rings are used.

Several mills advocate using spindle brakes where spindle speed is 11,000 rpm. or higher. Some mills, however, are using brakes on spindles running as slow as 4,000 rpm. No one suggested an effective means of stopping spindles except with brakes.

Most of the twelve mills that reported on using top-drive spindles gave these favorable replies:

"We run 10,000 rpm., have SKF bearings, flush every 12 months, and add oil every 4 months. Doffers clean chokes at time of doffing. There is no appreciable wear on spindle blades or paper tubes."

"Spindle speed increased 5 to 10%. We flush and relubricate needle bearings every nine months with 100-viscosity oil at 100 F. On 42s and 45s, spindles are cleaned every 144 hours by the doffers. The schedule is 72 hours for 27s. No wear has been noticed on the spindle blade and the wooden quill."

Both nylon and cotton spinning tapes are in use. Preference is for nylon bonded material, usually ⅝-in. wide. These tapes last about three times as long as cotton tapes and are usually cleaned in the same manner. Burning or melting does not seem to be a problem. A few mills report slightly decreased power requirements for the nylon tape.

Spinning supply cost in Georgia mills ranges from 0.24 to 0.5¢ per pound of yarn produced.

About one-third of the mills have spinners working on a fixed time cycle for patrolling. In some instances special cleaners do most of the cleaning, which permits a greater work assignment for spinners. The majority of mills do not have cycle spinning, however, and spinners do all or most of the cleaning. A few mills have special roll pickers.

Only two of ten mills have tried block creeling at spinning, and these mills did not find the system satisfactory. Objections: variation in yarn numbers, roving doffing time, and spinning production.

Open creels—4 over 0 to 4 over 2—are most effective for large roving packages.

SPOOLING—CLEANER

Comb-type snick blades are preferred over conventional blades on Barber-Colman spools. Mills unanimously report that more gouts and slubs are removed—up to 39% more in one instance. Blades have been used from one to five years and show no wear. Settings are:

Mill E	
16s warp	0.036 in.
14.5s warp	0.038 in.
11.5s filling	0.041 in.
Mill I	
22s warp	0.028 in.
14s warp	0.033 in.
21s filling	0.028 in.

Man-made-fiber blends are spooled at 750 to 1,250 yards per minute. Typical reports are:

- 65% cotton—35% nylon (17s), 1,250 ypm.
- 88% cotton—12% nylon (9s), 900 ypm.
- 50% viscose—50% acetate (15s to 30s), 900 ypm.

Most mills at one time or another have been troubled by yarn sloughing off paper tubes at spooling. Suggested remedies are:

"Oil lifting rods three times a week. Check weekly for bobbin build, stroke, and loose cams."

"Remove loose motion from builder. Rework cross shafts and coggles."

"Correct taper at top. Should be equal to diameter of ring."

"Take thread eye out of bobbin pocket."

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Better Way to Mix Reactive Dyes—You can cut handling and color-matching time in mixing fiber-reactive dyes that have a short dye-bath life. This new mixing unit overcomes problems of liquor life, and permits continuous batch mixes 84

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Geigy Tinolite Pigment Printing Colors

brilliancy of shade/prints on any fiber
light fastness/fast to dry cleaning

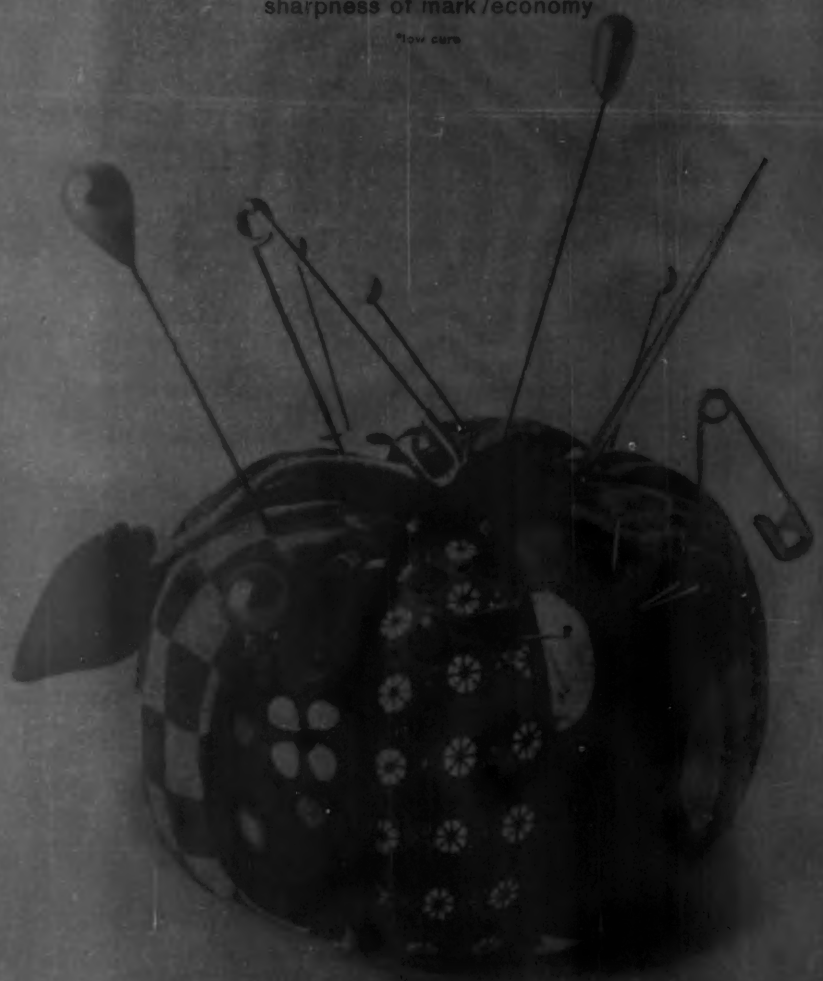
Geigy Tinolite LC* System

high degree of wash fastness/minimum crocking
fastness without high temperature curing

Geigy Tinolite Discharge Printing

no haloing/ease of application
sharpness of mark/economy

*low cure



Geigy Dyestuffs

News of the Month in . . .

Textile Chemicals

By ROBERT W. PINAULT, Associate Editor, TEXTILE WORLD

Research Chief Reveals New Way to Shrinkproof Woolens

A wedding of wool with a polyamide resin such as nylon 610 is the base of a new shrinkproofing process developed by the U. S. Department of Agriculture, Western Regional Research Laboratory, Albany, Calif.

Dr. Harold P. Lundgren, WRRL Chief, describes the process as interfacial polymerization.

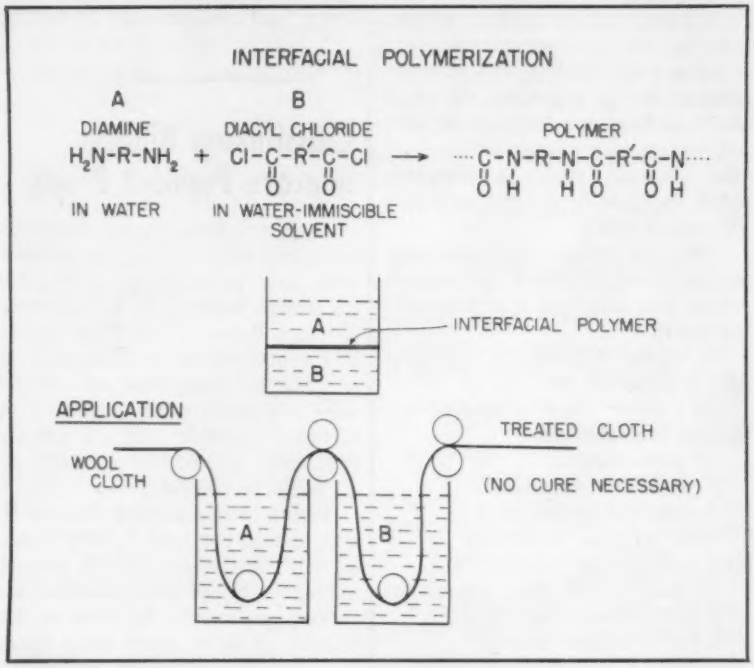
A number of amines and acyl chlorides are capable of forming nylon-type polymers at the interface between the water solution of the amine and the solvent solution of the acyl chloride. Dr. Lundgren reports that among others, sebacoyl chloride and hexamethylene diamine produce a satisfactory polymer. With this combination, good shrinkage control with a minimum effect on hand is possible on knitted wool outerwear fabrics. Among possible solvents, Stoddard solvent or Socal are quite adequate to carry the acid chloride.

Here's how WRRL applies the finish: The knitted fabric is run into a water solution of hexamethylene diamine and squeezed out to about 50% water content. It passes directly into another bath of Stoddard solvent and sebacoyl chloride (see drawing). There is a 20% pickup of the solvent solution, and the goods are squeezed out and dried. The resin doesn't need curing. An afterwash in detergent removes any loosely adhering resin and improves the hand of the goods.

The solutions are made up so that 1 to 2% of the diamine and 2 to 3% of the acid chloride remain in the goods.

Results? Woolens treated this way stand four 75-min. washings with a total shrinkage of 1 to 3%. Tensile strength isn't affected; abrasion resistance is 20 to 25% better than for untreated goods.

Analysis of the treated fabrics indicates that there is a definite combination of the nylon 610 with the wool fiber. The fibers average 100 to 200 angstroms in thickness.



The dyeing qualities of the wool aren't harmed. Most of the time you can treat dyed goods without affecting the shade.

The over-all appearance of the goods is improved—less tendency to mussiness and pilling. Static and moisture absorption properties remain about the same.

To date, knitted outerwear fabrics respond best to this treatment. Heavier blanket fabrics become boardy in hand.

What Happens When You Soap Vats

Dye scientists now think molecular change in the vat dye (and not crystallization) accounts for the shade change when you soap vat dyeings. Speaking before the Fiber Society at its spring meeting, J. Wegmann of Toms River Chemical Corp. made the following points:

Dyes in the 1,4- diaroylamine anthraquinone group supported this theory under test.

A new kind of isomer, called a contact isomer, was postulated for this group of dyes as being responsible for the different colors (dyed vs. dyed-and-soaped). The terminology is more precise than the older reference to different polar forms to explain the difference.

The fiber makes a difference, too, as dyers know. The dye aggregates that form in cotton don't change as much for a given dye as they do on rayon. Then again, if you use mixtures of vat dyes to match a shade, there is likely to be less change in shade than occurs in the individual dyes when they are soaped.

Glucosides Reduce Tendering Chances In Aniline Black Prints on Cotton, Rayon

A German discovery reduces the chances of getting tender areas in aniline black prints on cotton and rayon.

Instead of using aniline or an amino-diphenylamine hydrochloride as the dye-former, you can use para-amino-diphenylamine-N d-glucoside. The usual oxidants such as sodium chlorate, and catalysts such as sodium ferrocyanide, or copper or vanadium salts are ,included in the formula. During the aging process, the sugar residues from the N-glucoside split off and exert a protective effect on the cellulose, which is otherwise often damaged by the hot, acid conditions of aging.

You can reduce the N-glucoside to the corresponding N-glycamines, which also form black pigments by oxidation.

A typical formulation that uses the N-glucoside is:

10 parts para-amino-diphenylamine N-d glucoside.

19 parts water.

5 parts 2% ammonia.

3 parts polyglycol ether.

This solution is stirred slowly into a thickening composed of:

50 parts 6½% gum tragacanth.

5 parts ammonium chloride.

4 parts sodium chlorate.

2 parts 1% ammonium vanadate solution.

You print as usual, age for 10 minutes, and soap as usual. The method works on acetate, polyamide, polyester, and acrylic fibers.

Crosslinking Binders Improve Pigment Prints

Brighter prints, better washfastness, and less crocking are possible with new crosslinking binders for pigments developed by Farbenfabriken Bayer A. G. The binder is a copolymer of an alkyl ether of a methylol compound of acrylic acid or a methacrylic amide and an olefine. Suitable olefines include butadiene, styrene, acrylonitrile, or a vinylidene chloride.

Such a binder is made from 30% acrylic acid butyl ester, 40% butadiene, 26% styrene, and 4% methyl methylol ether of methylacrylamide.

You can modify the hand of the printed goods by using more butadiene to soften the effect, or a higher amount of acrylonitrile to make a firmer finish.

Crosslinking is induced by heating the printed fabric to 125 C. for 10 minutes.

How Cortical Cell Structure Affects Wool Fiber Dyeing Results

Dyers who've wondered why wool sometimes dyes unlevelly can take heart: Continuing scientific investigations are trying to pinpoint the reasons.

Dr. A. Maresh of American Cyanamid Co. pointed out at the spring meeting of the Fiber Society that there are dye diffusion differences in both axial and radial aspects of wool fiber. Lengthwise differences are mostly a result of degradation of the outer membrane of the wool fiber. That's why the tips of wool fibers most often dye darker.

The dyeing differences between the orthocortex and the paracortex are already well known. Most recent discovery is that dye tends to concentrate in the medullary channels of the fiber rather than at the cortical interstices, as had been reported. Some dyes and dyeing methods are less likely to cause troublesome color differences than others, as colored photomicrographs show.

Semi-Drying Speeds Bleach In This Peroxide Process

Here's a peroxide bleaching system that seems to have good potential if you handle moderate yardages in the open width.

The goods are padded with an enzyme, let stand four hours, and washed out. They are then given a caustic scour at the boil in 4% NaOH for one hour, and washed down to a pH of 8 to 9.

Then they are saturated with a peroxide solution of pH 8.5 to 10 that contains 1 or 1¾% H_2O_2 and 2 to 4% of a salt of phosphoric acid such as TSPP, sodium tripolyphosphate, or sodium hexametaphosphate. A sequestering agent may also be added at a rate of 0.3 to 0.6%.

The goods should carry 80 to 120% of their weight of this solution. After leaving the pad, the goods are dried down to about 10% moisture content and let stand 16 hours. A final washing removes the residual chemicals.

The method carries U.S. Patent 2,983,586 assigned to Food Machinery & Chemical Corp., San Jose, Calif.

New Modified Cellulose Has Finish Applications

Coatings, sizings, and a binder for nonwoven fabrics now seem possible with a low-substituted hydroxyethyl cellulose (HEC) just marketed by Rayonier, Inc.

The HEC produced by Rayonier's new process is alkali soluble and is distinguished by even substitution. Ethylene oxide reacts on about 1 in 20 of the reactable hydroxyl groups in the anhydroglucose units of the cellulose molecule.

Ethylose, as the product is called, is based on purified Southern pine woodpulp and is the lowest-substituted HEC that gives a clear alkaline solution at room temperature. Neutralization regenerates the original material. Present price of Ethylose is 50¢ per pound, sold in 50-lb. bags.

Low-Temperature Padding Improves Small Lot Vat-Dyeing Results

A Dutch system now solves some problems that confront dyers who have to dye relatively small lots of fabric with vat dyes.

H. Borsten of the Fibre Research Institute at Delft reports a vat-dyeing method that is especially suitable for pad-roll application in conjunction with the Svetema dwell chambers.

Best results come from padding on the vat dye in dispersed state in a solution that also contains the reducing chemicals.

The dye isn't reduced at room temperature in this process. The padded goods go directly to the air-free atmosphere of steam in the dwell chamber, after suitable preheating in the infrared area between pad and dwell chamber.

Experiments show that the reducing baths can be made around two formulas. For dyes that have a leuco potential of less than ±900 mv. at the calomel electrode, you use in the solution:

40 grams per liter NaOH.
40 grams per liter 80% sodium hydrosulfite.
44 grams per liter 40% formaldehyde.

If the leuco potential of the dyes is higher, the reducing solution has:

80 grams per liter NaOH.
40 grains per liter sodium hydrosulfite.
44 grams per liter 40% formaldehyde.

The padded goods are steamed for two to five hours, depending on depth of shade and the dyes involved.

Excellent penetration of tightly woven poplins and a wide range of shades are possible.

Here's the Latest Word on Dyes Suitable for Polypropylene Application

Max Levine, Fiber Development Dept., Hercules Powder Co., recently reported to the Fiber Society his work in the field of dye application to polypropylene.

Truth is, several classes of dyes will work with polypropylene, including vats, vat esters, disperse, and azoic types. Vat dyes work well in light shades if you apply them at pH 6 to 9 in a form that contains some vat-acid leuco material. Lightfastness is quite good on such dyeings.

You get good results with vat esters by first running the fabric in a reducing bath. Then you add the vat ester and raise the temperature to the boil. Finally, you add acetic acid to the bath. The vat acid appears to be the dyeing medium here also. The dyeings are fairly level.

Azoic dyes require a different technique from that ordinarily used for these colors. The phenolic component and the amine are mixed, and the goods are worked at the boil for several minutes. During this time the amine appears to penetrate the fiber. Then the pH is reduced to 9, and the phenolic component is absorbed and couples with the amine. Over-all dyeing results are good.

Disperse dyes are absorbed by polypropylene but also tend to seep out on the surface again, which causes serious crocking problems on dyed fabrics.

Some disperse dyes are fairly useful in light shades. It is interesting to note that lightfastness of disperse dyes is best on polypropylene that has been treated to be more stable to light.

Ultrasonic "Grinding" Speeds Dye Diffusion

Application of ultrasonic waves to a dyebath before entry of cloth speeds dye diffusion into man-made fiber, according to a Swiss report.

High-frequency resonance with an intensity of 1 w/cm² and 40/cm² and at frequency of 22 kHz does the trick. Experimenters think that the cavitation produced in the dyebath reduces the particle size of the dyestuff. This reduction speeds up entry into the fibers.

New Optical Bleaches Have Better Color

The off-white color of many fluorescent brightening agents produces a yellow cast on fabrics in spite of the whitening effect due to their fluorescence.

Now Geigy A. G., Switzerland, discloses in British Patent 861,451 that whiter chemicals are available for optical whitening effects.

The new materials are bis-4:5 naphthylene-1:2:3 triazoyl stilbene compounds. They are valuable for whitening cellulosic compounds, to which they are substantive. They can also be used on polyamide fibers. The whitening effect is fast to light, washing, and chlorine.

Did You Know . . .

. . . that sharp temperature changes in treating baths can cause uneven beam dyeing? Too great a temperature shock may blow the package.

■

. . . that you can improve crockfastness of naphthol-dyed goods with an acid after treatment? Suggested by a Swiss chemist is a hot 1% HCl bath, followed by rinsing.

■

. . . that small amounts of inorganic or organic copper compounds increase stability of polyamides to high temperatures? You'll get best

results by adding 0.03% copper acetate, 1% potassium iodide, and 0.25% sodium orthophosphate to the melt in finely dispersed form. The thermal stability of polyamides modified by these metallic salts is 3,500 hours at 300 F. Untreated material deteriorates after two hours at this temperature.

■

. . . that lowered water-imbibition property of resin-treated rayons is the chief cause of poor abrasion resistance? There is a substantially linear relationship between abrasion resistance and the resin content of such fabrics.

For instance, with 4% combined formaldehyde or 15% resin add-on, water imbibition drops from 90% to a minimum of 30%.

■

. . . that for long-bath dyeing with reactive dyes, good substantivity is more important than it is in pad-dyeing processes? In fact, for pad-dyeing substantivity is less desirable than good solubility, especially if intermediate drying is used. But a nice balance between substantivity and solubility is desirable to avoid dye migration during drying.

■

. . . that the presence of brass or copper alloy steam pipes in stainless steel scouring machines has a marked effect on subsequent bleaching with hydrogen peroxide? The goods can pick up enough copper in scouring to affect fluidity and hydrogen peroxide consumption during bleaching.

What's New In Dyes and Chemicals

Cationic Softener

Avitex Y . . . is an effective softener for all types of fibers and provides moderate antistatic protection for hydrophobic fibers. It improves tear strength, napping properties, and sewing characteristics of treated fabrics. It is compatible with starches, gums, and most types of resins in use today.

The softener causes only slight changes in the shade of selected vat and fast-to-light direct dyes and does not seriously affect lightfastness. Fabrics finished with this softener have excellent resistance to discoloration and odor.

The product can be applied by padding or exhaustion methods. E. I. du Pont de Nemours & Co. **(Circle D-1 on Reader-Service Card)**

Water Repellent

Hydro-Pruf C . . . is a silicone-based water repellent recommended for application to cotton fabrics.

Outstanding property is durability to repeated laundering at the boil in the presence of alkaline extenders that are used in commercial laundries. As is true of most silicone-type water repellents, the product is also durable to drycleaning.

Hydro-Pruf C is compatible with most thermosetting resins and color fixatives and requires no extra operation on prewashing before application. The hand of cottons treated with this product is soft, and the fabrics drape well. Bath stability is good. There is no shade change on naphthol-dyed goods that are treated with this material. Arkansas Co. **(Circle D-2 on Reader-Service Card)**

Polyethylene Latex

Poly-Em . . . is a 40% polyethylene emulsion that will be offered in a variety of molecular weights. The product is suggested as a softener to be added to resin or reactant-type finishes, or as a self finish. There is no odor or color imported to the fabric by use of this softener, now available in semi-commercial quantities. Spencer Chemical Co. **(Circle D-3 on Reader-Service Card)**

Nylon Dye

Nylanthrene Scarlet 2GL p.a.f. . . . is a neutral-dyeing color that provides level, well-covered shades on polyamide fabrics. The dye has superior lightfastness and closely approximates the brightness of the acid-dyeing scarlets. It can be used with other Nylanthrene dyes. Althouse Chemical Co. **(Circle D-4 on Reader-Service Card)**

Leveling Agent

Dyasist #486 . . . is recommended for producing level dyeings on woolen fabrics and yarns. It is especially useful where acid dyes are used with sulfuric acid. Also useful with most milling colors.

The product is beneficial as a stripping agent to be used before goods are redyed. Arkansas Chemical Co., Box 210, Newark, N. J. **(Circle D-5 on Reader-Service Card)**

Dyeing Assistant

Dispersol CWL . . . cuts over-all dyeing time and improves leveling properties of the dyes used.

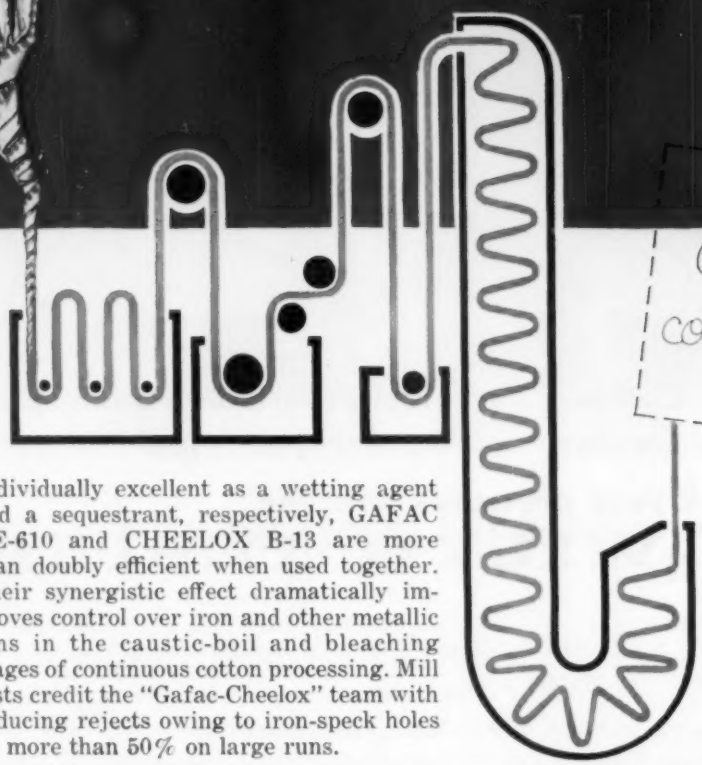
This assistant is especially useful with acid-milling dyes that are normally considered poor in leveling properties. With it, you can use combinations of dyes that previously were unsuitable.

There is no reduction in fastness to light or wet treatments if the assistant is used.

By reducing the rate of strike, the product permits higher starting temperatures in the dyebath, which shortens dyeing time. With this assistant you can apply acid milling dyes under strongly acid conditions. Arnold Hoffman & Co., Inc., 55 Canal St., Providence, R. I. **(Circle D-6 on Reader-Service Card)**

GAFAC® RE-610 wetting agent with CHEELOX® B-13 sequestrant

can cut rejects 50% or more in continuous bleaching of cotton goods



Costs no more than conventional systems!

Individually excellent as a wetting agent and a sequestrant, respectively, GAFAC RE-610 and CHEELOX B-13 are more than doubly efficient when used together. Their synergistic effect dramatically improves control over iron and other metallic ions in the caustic-boil and bleaching stages of continuous cotton processing. Mill tests credit the "Gafac-Cheelox" team with reducing rejects owing to iron-speck holes by more than 50% on large runs.

GAFAC RE-610 phosphate ester is a new 100%-active anionic surfactant offering a unique combination of properties in high concentration of alkali: good solubility, chemical stability, and oil- and wax-emulsifying ability—even at the boil. Good rinsability too—though residual amounts in the goods will not interfere with dyeing.

GAFAC RE-610 and other GAFAC surfactants are effective at various other stages in the processing of cellulosic and synthetic-fiber yarns, piece goods, and hosiery. Write for data sheet TA-63 entitled "GAFAC Surfactants in Textile Processing."

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S-W NIP-WIDTH TESTER

As you probably know, a ¼" variation in nip width may indicate as much as 150 lbs. of localized *extra pressure.*

When your rubber roll is installed it is too late to change the crown. Yet, with the S-W Nip-Width Tester you can tell in advance how your rolls will perform. Results are improved processing and considerably longer roll life. These, of course, help profits.

For information about the S-W Nip-Width Tester get in touch with your S-W Sales Engineer.

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- accurate readings plotted on graph paper permit adjustments to improve processing

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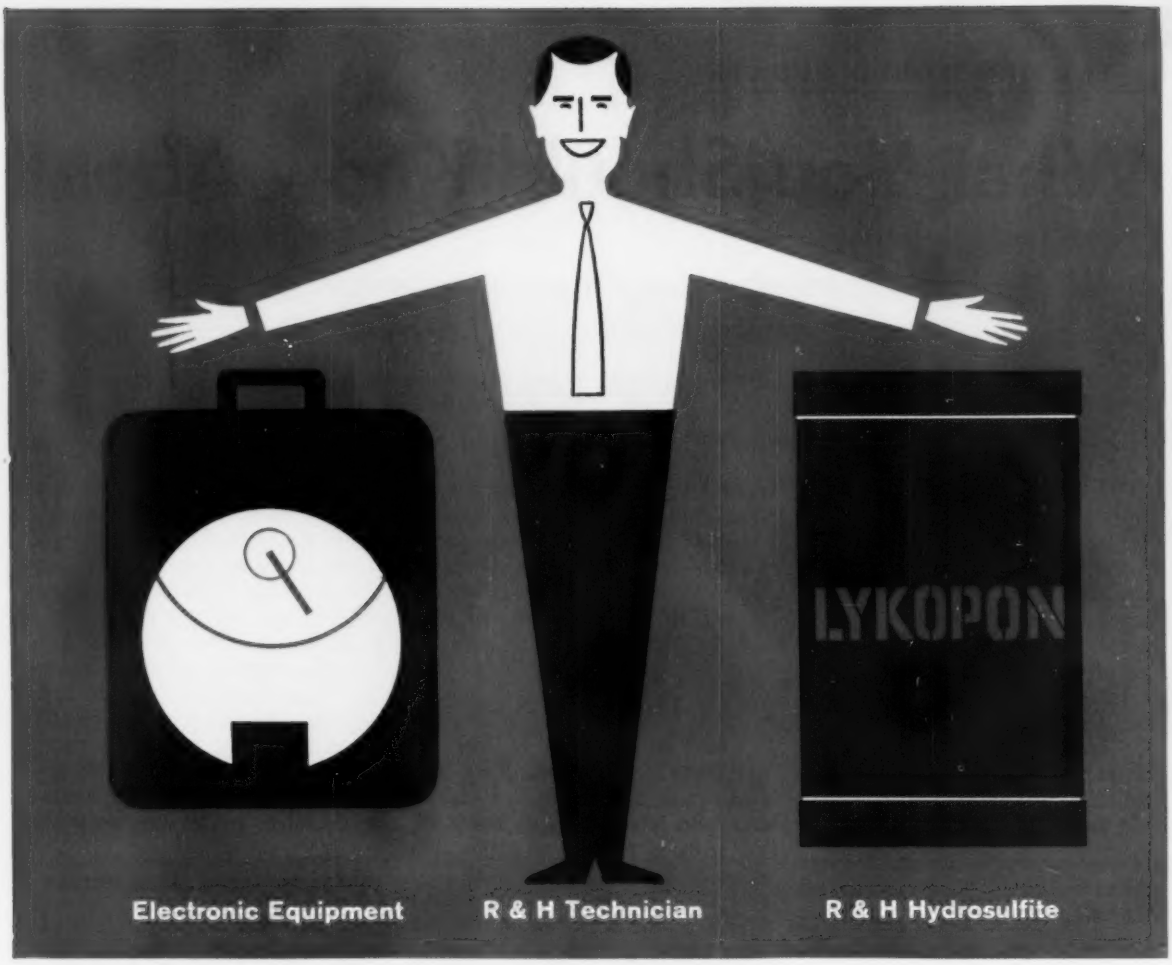

All you need for better vat dyeing

Very few products of any kind—in any industry—have been as thoroughly proven as Rohm & Haas LYKOPON®, the original domestic sodium hydrosulfite. Since 1919, LYKOPON has been a useful tool in perfecting vat dyeing operations throughout the U.S. and the world, helping get best results, helping make dyeing operations more profitable.

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A TEXTILE WORLD UPDATE

What You Should Know About

In this third installment of an expert's series on dyeing, you'll move up to date on vat dyeing fibers in skein form. Here's what you need to know about handling cotton, viscose, and silk.

YOU CAN DYE cotton skeins on any one of several types of skein-dyeing machines, or in hand tubs.

Viscose skeins do better on the Cascade machine (photo, facing page). Manual handling in tubs causes tangling and makes even dyeing of vat shades nearly impossible.

Hussong, Pegg, Klauder-Weldon, and Giles machines are unsuitable for applying vat dyes to viscose rayon skeins because of the extreme difficulty in producing level dyeings and the bad effect on winding quality, too.

HANDLING VISCOSE YARN

Viscose rayon is more reactive than cotton. You have to take special precautions to prevent tendering of viscose yarn during vat dyeing of skein yarn.

Tendering is rapid at temperatures above 175 F., particularly because of intermittent oxidation and reduction that occurs in skein dyeing. Therefore this temperature is the absolute maximum you should use when you vat dye viscose skeins.

To prevent tendering, even in baths at normal temperatures, you should add about ¼ ounce of tannic acid or sodium lignin sulfonate per gallon of dye bath.

Tannic acid is neutralized with caustic soda before being added to the dye bath. Dyeing should be carried out in subdued light, especially when you use certain vat dyes that can quickly tender viscose if you permit strong light to shine on the fiber containing the leuco form of the dye. Dye manufacturer's recommendations on this point should be followed closely. It is also important to pick vat dyes that level well in skein-dyeing processes.

By the late O. W. CLARK
Dyes Department
American Cyanamid Co.
Bound Brook, N. J.

DYEING ON HAND TUBS

Little skein dyeing is done on hand tubs today because of the high cost of this method for dye, chemicals, and labor. Where necessary, the reduced method of application is used, with liquor ratios of 1:20 to 1:40. The dye is reduced in one fourth of the total volume of the bath, and then the bath is diluted to volume.

Previously wetted skeins are introduced and worked rapidly to insure levelness. A small amount of wetting agent reduces the tendency of the bath to produce scum. Too much may cause excess foaming and the skeins will float, thus interfering with good dyeing.

After the dye is absorbed, the skeins are then laid up and a fresh rinse bath is prepared. For dark shades it is a good idea to add 4 ounces of hydro per 100 gallons of rinse water to aid in getting a clean dyeing.

The thoroughly rinsed skeins may be oxidized by exposure to air or by treatment in an oxidizing bath based on hydrogen peroxide, sodium perborate, or sodium bichromate.

If the sample shows the skeins are not on shade, then the bath is brought back to the proper concentrations of alkali and hydrosulfite by addition of caustic soda and sodium hydrosulfite. An addition of dye is made in two portions with skeins worked between the additions, and after a suitable dyeing time the skeins are again sampled. Of course if the shade at any time becomes too deep, then it may be necessary to strip off a portion of the dye in a fresh caustic soda-hydrosulfite bath.

The combination of dyes used for this type of dyeing should level readily. With many dyes that do not level readily, it may be necessary to use a more complicated procedure and resort to temperature manipulation and leveling assistants.

USING HUSSONGS OR PEGGS

Liquor ratio averages 1:16 to 1:20. For light shades, as with hand tubs, dye by the reduced method. Temperature manipulation and leveling assistants are needed to make level dyeings. Also you often must add the reduced dye in two portions—raise the machine cover and shift skeins between additions.

Example:

SHADE . . . Gold.

MATERIAL . . . 500-lb. 6s/1 carded cotton yarn.

MACHINE . . . Hussong. Liquor volume, 1,000 gallons. Liquor ratio, 1:16.

Procedure:

1. Wet yarn for 10 minutes at 120 F. in a bath containing anionic wetting agent—0.1 ounce per gallon (6 pounds, 4 ounces). Drain and refill at 70 F.

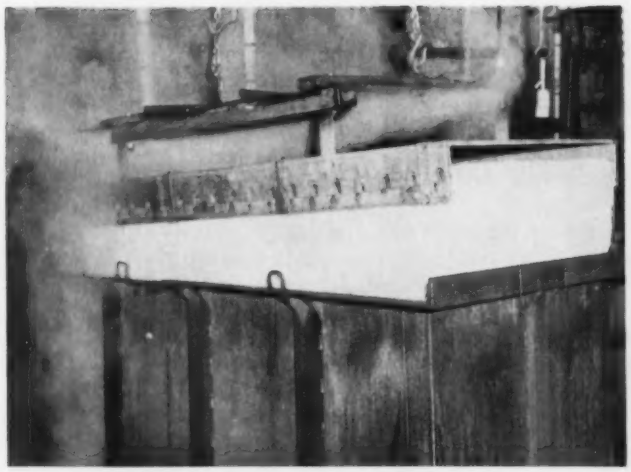
2. Add:

Caustic soda—0.6 ounce per gallon (30 pounds).

Sodium hydrosulfite—0.6 ounce per gallon (30 pounds).

Sodium lignin sulfonate—0.15 ounce per gallon (9 pounds, 6 ounces).

Vat Dyeing Today—Part 3



HUSSONG machine is widely used for direct and sulfur colors as well as vats. Liquor is circulated by pump behind a baffle.

CASCADE machine is popular for viscose skein dyeing. Level dyeing without much yarn disturbance is a strong point.

Epsom salts—0.05 ounce per gallon (3 pounds, 2 ounces).

3. Reduce the dye in a stock vat for 5 minutes:

Anthraquinonoid-type of yellow paste (25 pounds-5%).
Caustic soda—(12 pounds).
Sodium hydrosulfite—(12 pounds).
Water at 140 F.—(50 gallons).

4. Add the reduced dye to the bath and start the circulation. Heat to 100 F. at the rate of 1 F. per minute. Heat rapidly to 120 F.

5. Add salt—½ ounce per gallon (31 pounds).

6. Run 10 minutes at 120 F.

7. Add salt—1 ounce per gallon (62 pounds).

8. Run 10 minutes at 120 F.

9. Add salt—2 ounces per gallon (124 pounds).

10. Run 10 minutes.

11. Drain, and refill with cold water. Circulate 5 minutes.

KLAUDER-WELDON OR GILES

Look at these machines in skein dyeing. Liquor ratio is about 1 to 17. The reduced method aided by temperature manipulation and leveling assistants is applicable here. The pigment method gives better penetration and levelness.

Several versions of the pigment method are used in various dyehouses. In one method, the yarn is treated in a bath containing dispersed, unvatted dye, and then the caustic soda and hydrosulfite are added to the dye bath. In another method often used, an attempt is made to exhaust the unvatted dye as completely as possible before the addition of hydrosulfite.

Among the chemicals that are added to the dye dispersion to assist exhaustion are sodium bisulfite, caustic soda, sodium sulfoxylate formaldehyde, sodium sulfide, and salt. In another method, soda ash and hydrosulfite are added in an effort to exhaust unreduced or partially reduced dye before caustic soda is added to solubilize the dye and cause true dyeing to occur on the fiber.

In Klauder-Weldon or Giles machines, the skeins and dye liquor are extensively exposed to the atmosphere and the dye bath is agitated vigorously and constantly. For these reasons, the system uses large quantities of chemicals. Tendering as a result of intermittent oxidation and reduction can be prevented by the addition of ¼ ounce of tannic acid, which is neutralized with caustic soda, as previously noted.

USING CASCADE MACHINES

Rapid and economical production of vat shades and the excellent winding qualities of the dyed yarn are responsible for the popularity of this machine. It is especially suitable for filament yarns of man-made fibers.

Usual yarn-to-bath ratio is about 1 to 17. Either the pigment method or the reduced method is suitable.

Vat dyes exhaust with extreme rapidity on Cascade machines, and it's often advisable to control dyeing behavior by temperature manipulation and leveling assistants. When using the reduced method, you may have to add the stock vat in several portions.

Light and medium shades dye in about 6 to 7 minutes, and the original concentrations of caustic soda and sodium hydrosulfite maintain reduction for about that length of time. Dark shades may require a 12- to 18-min. dyeing period. At the end of each 6-min. period the bath is replenished with an amount

of caustic soda and sodium hydrosulfite equal to that originally used. For light shades, the dyes recommended for hand-tub dyeing are most suitable.

To secure the same shade on the inside and outside of the skeins, you may sometimes have to turn the skeins inside out on the arms at a suitable point in the dyeing procedure. Plastic covers for each armload of skeins reduce the rate of hydro consumption and also assist level dyeing.

Reduce the dye in a stock vat. Prime the dye bath with suitable assistants and with 1 ounce of caustic soda and 1 ounce of sodium hydrosulfite per gallon for light and medium shades, and with 1½ to 2 ounces of these chemicals per gallon for dark shades.

Add the stock vat to the dye bath and circulate on the unwetted yarn for the required length of time. Turn on cold water and rinse with running cold water until the pH drops to 9.0. Oxidize, soap, and rinse by the usual methods.

Example 1—Reduced Method:

SHADE . . . Light chartreuse.

MATERIAL . . . 75-lb. filament viscose skeins—300 denier, 40 filament.

MACHINE . . . 10-arm Cascade. Liquor volume, 150 gallons. Liquor ratio, approximately 1:17.

Procedure:

1. Prepare the dye bath at 65 F.
2. Add:

Caustic soda—1.0 ounce per gallon (9 pounds, 6 ounces).

Sodium hydrosulfite—1.0 ounce per gallon (9 pounds, 6 ounces).

Sodium lignin sulfonate—0.15 ounce per gallon (1 pound, 6½ ounces).

Epsom salts—0.05 ounce per gallon (7½ ounces).

(Dissolve these last two substances together.)

Anionic wetting agent — 0.33 ounce per gallon (1 pound, 2 ounces)

Tannic acid—0.125 ounce per gallon (1 pound, 3 ounces). Tannic acid is neutralized with caustic soda.

3. Reduce the dye for 5 minutes at 140 F. in a stock vat:

Vat Yellow 2, C.I. #67300—2% (1 pound, 8 ounces).

Vat Green 3, C.I. #69500—0.3% (3.6 ounces).

Caustic soda—2.0 ounces per gallon (8.0 ounces).

Sodium hydrosulfite—2.0 ounces per gallon (8.0 ounces).

Water—4 gallons.

4. Add half of the stock vat to the dye bath and circulate for 2 minutes on the initially dry yarn. Add the rest of the stock vat to the dye bath and run 2 minutes. Stop pump. Heat to 175 F. Run 1 minute. Stop pump. Turn skeins inside out. Add 3-lb. hydrosulfite.

5. Heat to 175 F., start pump, and circulate 3 minutes.

6. Rinse solution cold, oxidize, and soap.

Example 2—Pigment Method:

SHADE . . . Navy.

MATERIAL . . . 100-lb. 30s/1 cotton.

MACHINE . . . 12-arm Cascade. Liquor volume, 200 gallons. Liquor ratio, 1:17.

Procedure:

1. Disperse in the machine in 200 gallons of soft water at 195 F. with 15% Vat Blue 16, C.I. #71206 (15 pounds).
2. Add wetting agent (3 pounds).
3. Circulate 5 minutes at 195 F. Stop pump.
4. Add:

Caustic soda—2 ounces per gallon (25 pounds).

Sodium sulfide—1 ounce per gallon (12 pounds, 8 ounces).

Sodium hydrosulfite—1 ounce per gallon (12 pounds, 8 ounces).

5. Reduce 2 minutes at 195 F. Start pump. Run 5 minutes at 195 F.
6. Add Sodium hydrosulfite—1 ounce per gallon (12 pounds, 8 ounces).
7. Circulate 5 minutes at 195 F. Add:

Caustic soda—1 ounce per gallon (12 pounds, 8 ounces).

Sodium hydrosulfite—1 ounce per gallon (12 pounds, 8 ounces).

8. Circulate 5 minutes at 195 F. Rinse cold, oxidize, and soap.

NATURAL SILK IN SKEINS

When dyed with vat dyes, natural silk is always in the pure, unweighted condition. But little natural silk is vat dyed in the United States. Other classes of dyes produce excellent results on silk without the complications of after-treatments. Here are some pointers on the application of vat dyes to silk:

Consider the deteriorating effect of caustic soda on silk when you set up a vat-dyeing procedure for this fiber. If possible, concentration of caustic in the dyebath should not exceed ½ ounce per gallon. Temperature of the bath should not exceed 120 F., and dyeing time should be less than one hour. Protective agents, such as glue or sodium lignin sulfonate, will reduce the effect of caustic on silk.

If the silk is dyed on hand tubs or a Buhlman machine, the liquor ratio is about 1 to 40.

The permissible concentration of caustic soda in the dye bath is about ⅔ ounce per gallon at 80 to 100 F., about ½ ounce per gallon at 120 F., and about ⅓ ounce per gallon at 140 F. From ¼ to ½ ounce per gallon of sodium lignin sulfonate is suitable as a silk protectant.

In liquor ratios varying from 1 to 40, don't forget the total amount of caustic soda as well as the concentration. In shorter liquor ratios and short dyeing periods, the alkali concentration can be higher than given above.

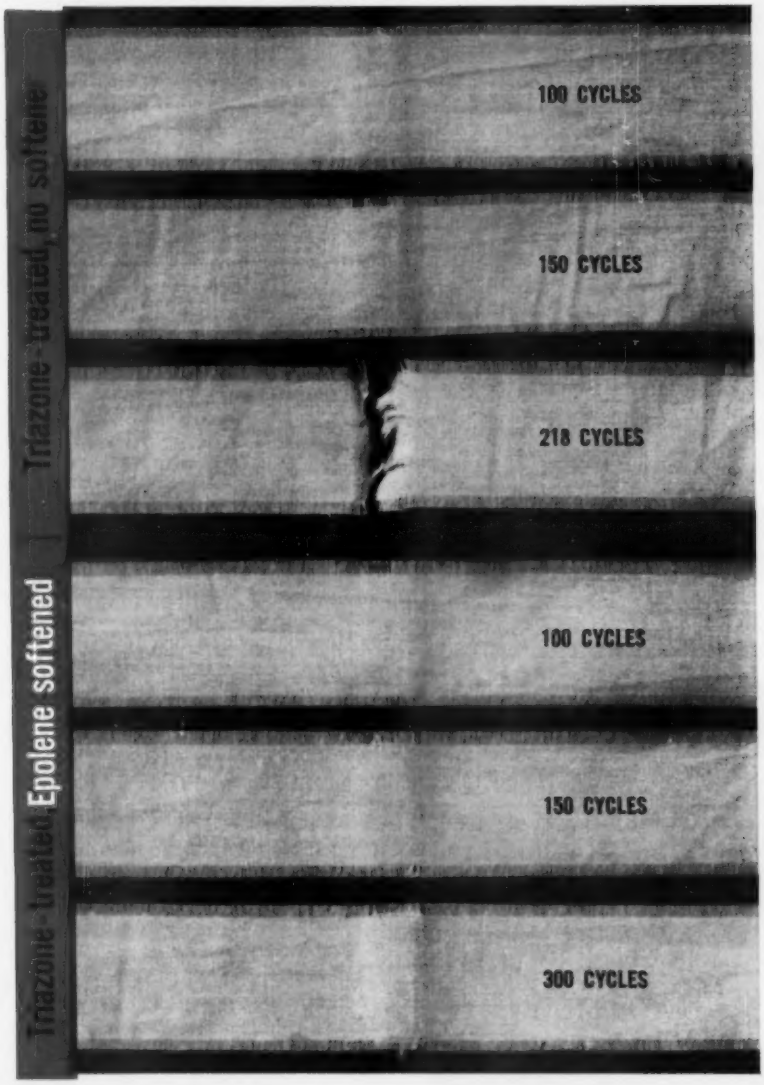
Much larger amounts of salt are required for satisfactory exhaustion of anthraquinonoid vat dyes on silk than on cotton. For heavy shades, the necessary concentration of salt may reach 16 ounces per gallon; for many Class I dyes and for medium shades, 4 ounces per gallon. When dyeing cotton, salt is not ordinarily used with Class I dyes.

Silk skeins should be thoroughly rinsed after dyeing until they are neutral to phenolphthalein. Then when you acidify the skeins for final neutralization, there will be no local development of heat from caustic-acid reactions.

With anthraquinonoid dyes having a low affinity for silk, it may be necessary to salt-rinse or centrifugally extract the skeins.

Oxidation before acidification is done with the skeins hung in air or with the use of hydrogen peroxide. A final thorough soaping is given vat-dyed silk skeins to develop the true shade and to secure maximum fastness to crocking.

The Stoll-Flex Abrasion Test demonstrates the increased strength given to a resin-treated cotton fabric by an Epolene softener.

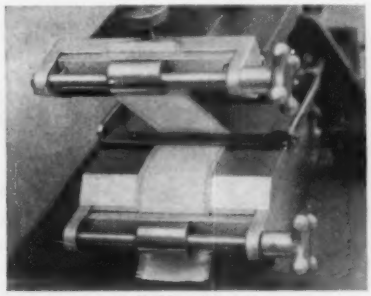


IT is axiomatic in the textile industry that the finishing resin alone does not a wash-and-wear fabric make. In fact, the variables are many, and often complex.

Of primary importance is selection of the softener. If properly chosen to match the specific type of finishing resin to be used, the combination can provide the optimum in tear strength, abrasion resistance, crease recovery, hand, and sewability for the treated fabrics.

Eastman offers three emulsifiable types of polyethylene resins for use as softeners... Epolene E-10, Epolene E-11, and Epolene E-12. These low-molecular-weight polyethylenes are suitable for either nonionic, anionic, or cationic systems, easily forming emulsions that are stable and low in color.

Epolene polyethylene emulsions have been evaluated under operating conditions with all of the principal wash-and-



Stoll-Flex Abrader

wear resins in use today. These include triazone, triazene, melamine formaldehyde, methylated melamine formaldehyde, dimethylol ethylene urea, and methylated urea-formaldehyde type finishing resins. The results of these test procedures are available to aid you in selecting the right softener for your finishing requirements.

For further information about Epolene textile emulsions, their preparation and use, contact your Eastman representative, or write Eastman Chemical Products, Inc., subsidiary of Eastman Kodak Company, Kingsport, Tenn.

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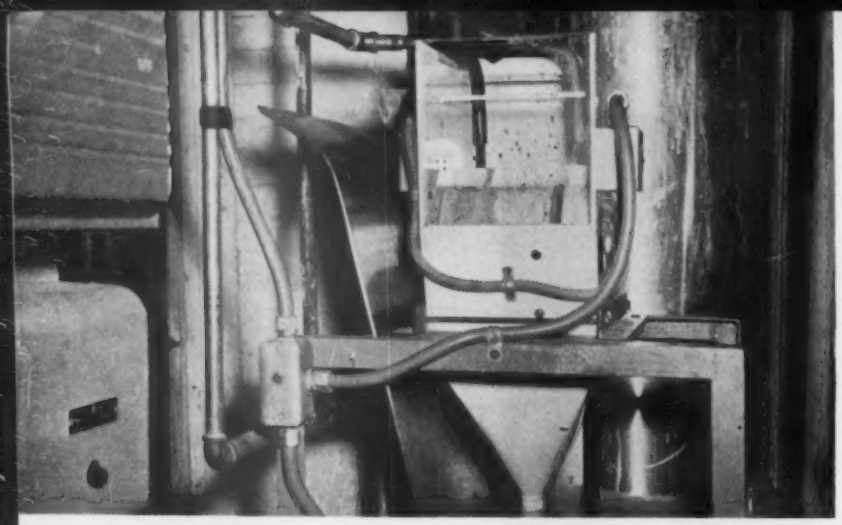


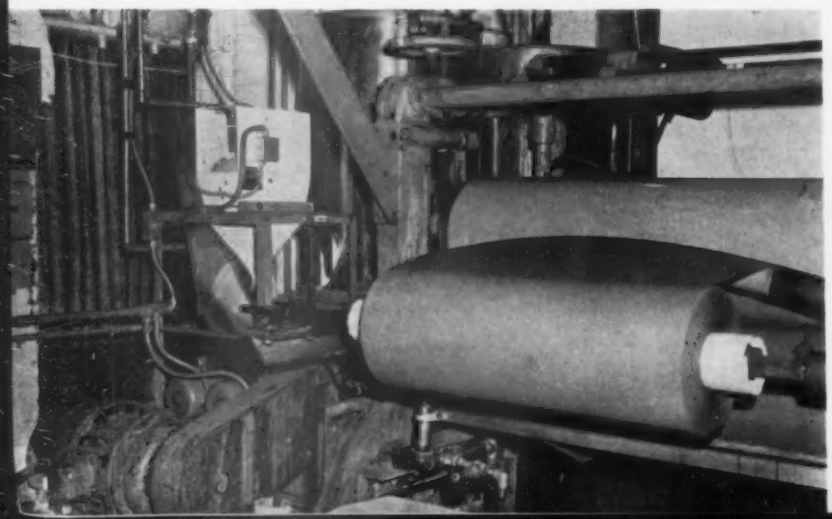
MIXING of Procion dyes is done with this Horsfall unit. With a 7-to-1 ratio, unit makes one gallon of dye liquor at a time. It operates automatically.

CHEMICAL TREATMENT & FINISHING

Better Way to Mix Reactive Dyes

Here's proof positive: If you mix reactive dye batches continuously, you'll get more even dyeing, easier shade matching, faster processing, and savings up to 1.5¢ a yard. Here's how to do it, step by step.

DYEING at 90 yards per minute is done on this padder. A special liquid-level control (on the dye box) actuates the mixing unit keeping the dye box full.



NOW YOU CAN make continuous batch mixes for fiber-reactive dyes that have a short dye-bath life.

What's significant about this? Look at it this way:

The dye liquor for most fiber-reactive shades has a use-life of only 10 to 15 minutes. The longer the liquor stands, the greater the loss in color. That's why, up to now, the dyer using these shades has had to make short runs with small batches.

While short runs are desirable for special orders, many dyehouses object to their high cost. Color matching takes as much time for short runs as for long runs. Also handling is increased for short runs.

Any answer to these problems would be welcome. The Pontiac Division of Fruit of the Loom, Inc. has such an answer. It uses a new dye mixing unit (Horsfall, developed by ICI) that overcomes the problems of liquor life for fiber-reactive dyes. The operation is simple. Here's how it goes:

. . . **Batches** are mixed continuously and uniformly.

. . . **Dye** goes on the fabric moments after the final mixing.

. . . **Shade matching** is easier and more economical.

. . . **Dye** goes on more evenly.

. . . **Small lots** can be run more economically.

. . . **Savings** are 0.5 to 1.5¢ per yard compared to vat colors.

INSTALLING—EASY

Pontiac uses a padder for fiber-reactive dyeing, and the Horsfall unit feeds the dye box. Only two modifications are needed on the pad:

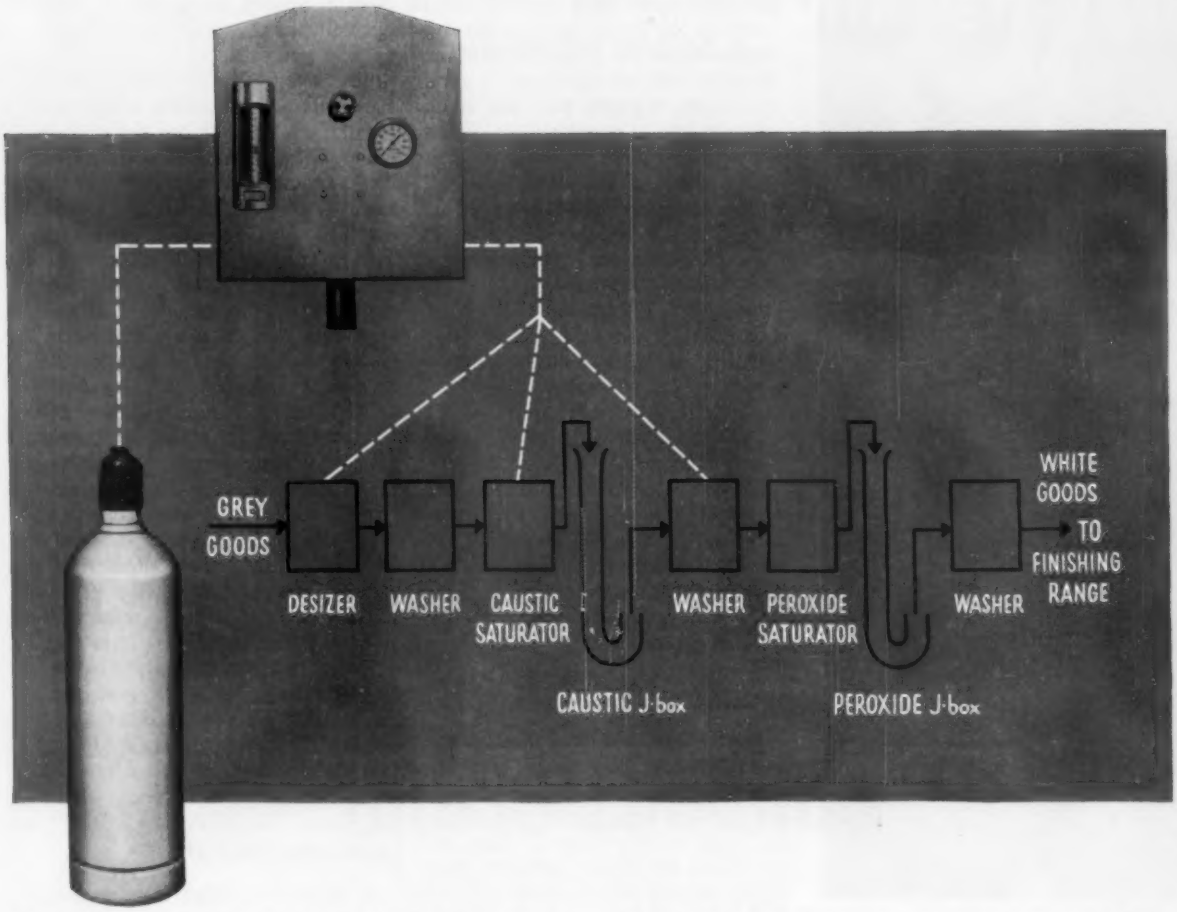
1. A 1-in. pipe manifold (with small holes drilled every two inches) feeds the dye box.

2. The dye box has an automatic liquid-level control. This control adjusts to give a dye-box level between three and seven gallons.

All runs at Pontiac are made with the dye box full except when shades are being matched—then only three gallons are used.

The Horsfall unit (photo above) is a continuous mixing machine that combines the dye solution with the alkali solution. Designed for a mix

THE PENNSALT DIRECT CHLORINATION PROCESS HELPS CUT YOUR BLEACH CHEMICAL COSTS!



Pennsalt's latest technical service aid to textile finishers is a new, low-cost process* for introducing chlorine gas directly into continuous peroxide bleaching systems. The process adds chlorine to your caustic desizer, caustic saturator, and/or to the washer preceding the peroxide saturator. The result—*substantial chemical savings.*

The Pennsalt chlorination process is simple, yet effective . . . requires no expensive additional finishing equipment . . . no complex testing procedures . . . no additional operators. The simple, inexpensive control equipment pays for itself quickly through reduced chemical costs.

(See our complete listing in CHEMICAL MATERIALS CATALOG)

Pennsalt's textile finishing service can help you reduce finishing costs through direct gas chlorination. Let us give you a thorough demonstration in your mill at no charge. Ask your Pennsalt representative for details, or write Industrial Chemicals Division, PENNSALT CHEMICALS CORPORATION, 3 Penn Center, Philadelphia 2, Pa.

To get the most from your finishing operations ask for Pennsalt textile service. Assistance like this is only a part of the complete, personalized technical service available from Pennsalt. And for the most from your chemicals be sure to ask for Pennsalt caustic soda, chlorine, hydrogen peroxide, ammonium chloride, ferric chloride and surfactants.

*Patent applied for

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Pennsalt Chemicals
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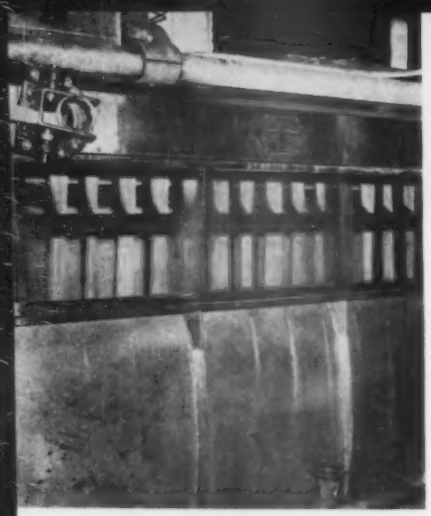
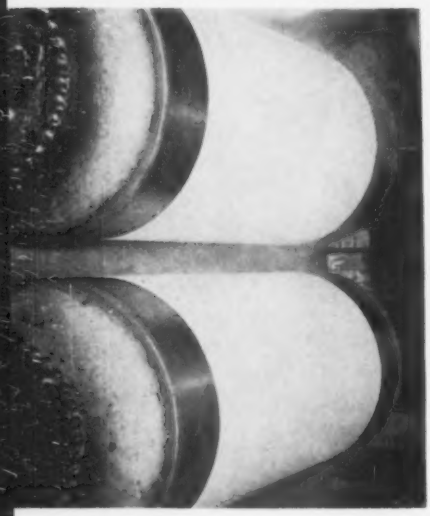
CIRCLE 85 ON READER SERVICE CARD

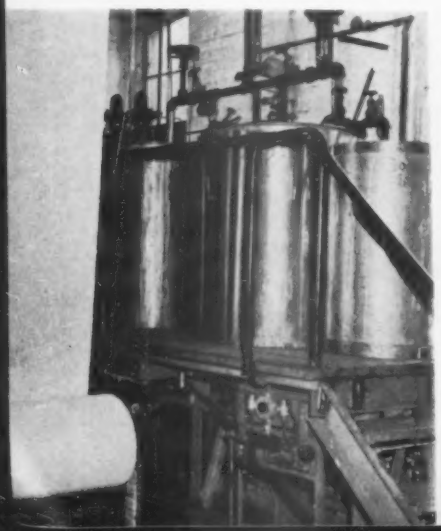


WASHING is done in the rope form in a conventional washer. A neutral detergent washes out excess dye.



DRYING takes place on steam-heated cans at normal temperature. But any conventional type of drying can be used.

MIXING area for dye and alkali is alongside padder. Solutions feed from kettles directly to the dye mixing unit.



ratio of seven parts of dye to one part of alkali, the unit makes one gallon of liquor at a time.

When the liquor level in the dye box gets low, the level control starts the automatic mixing cycle. A valve opens and a pump puts the alkali solution into its compartment. When this compartment is full, a limit switch shuts off the alkali flow and opens the dye solution valve. This action triggers another pump to fill the dye-solution compartment. When the compartment is full, a limit switch (in the dye compartment) stops the flow of dye and starts the last operation of the unit—mixing the two solutions.

These separate solution chambers are mounted on a common shaft. When both compartments are full this shaft rotates (actuated by the switch in the dye solution chamber), dumping the two solutions into the bottom of the Horsfall machine. This machine mixes the dye and alkali as they flow by gravity to the dye box on the padder.

MAKING THE SOLUTIONS

Pontiac installed three mixing kettles alongside the padder, and the solutions (dye and alkali) are fed directly from these kettles. Two kettles, used for preparing the dyes, are the same size—120 gallons. The other kettle, which Pontiac uses for the alkali solutions, is smaller (about 60 gallons). By using two dye kettles, Pontiac can mix two different dyes at once. This tactic saves time and keeps the padder running continuously, too.

These kettles are standard units used in any dyehouse. But Pontiac installed the pipes, valves, pumps, steam, and water supply needed to make this area self-sufficient. They also added a new wrinkle. Procion dyes in solution form a dispersed mixture. To eliminate the slightest possibility that some dyes may settle out, Pontiac put drilled pipes across the bottom of the dye kettles. Air is pumped through this pipe, and bubbles up through the solution. This bubbling air keeps the dye solution consistent and level throughout the kettle.

It is important to note that all the different weights of cotton fabrics used at Pontiac can be run by this pad-batch method. Also the cost of dyeing, compared to other dyestuffs, has been reduced from 0.5 to 1.5¢ per yard.

For dyeings over 2%, Pontiac uses sodium metasilicate anhydrous for the alkali solution; for dyeing under 2%, soda ash is preferred. The amount of alkali used is equal to the amount of dyestuff. However, the minimum quality of soda ash used must equal 0.65 ounce per gallon (used for light shades). For example, with a volume of 210 gallons containing 20 pounds of color, the alkali mix would contain 20 pounds of soda ash in 30 gallons (7 to 1 ratio). Once the dye and alkali solutions are made, the dyeing process is quite simple. As previously discussed, the Horsfall unit continuously feeds the mixed liquor to the padder, which runs at speeds up to 90 yards per minute. After padding, Pontiac allows the goods to hang on a rack for a minimum of two hours. Then goods are washed on a conventional rope soaper through hot water and neutral soap. This rope washing is completed in three minutes. From the washer the goods are dryed on steam cans at usual temperature.

MATCHING SHADES

In this process, fiber-reactive dyes require a minimum of two hours to fix the color. This presents some problems on color matching. Here is how Pontiac does it: Accurate matches are made in the laboratory to determine the initial dye mix. Then Pontiac runs a 4-in. fabric strip through the padder using three gallons of liquor. To accelerate color fixing, the strips are dried for a half hour on a steam drum. This system may cause some delay in starting a run, but shades can be matched accurately.

Pontiac is well satisfied with its procedure for applying cold-type Procion dyes. The head dyer talks about another advantage besides lower cost. Small dye lots, preferred today, can be handled quickly and economically. And this complete installation (with available padder and mixing kettles) costs Pontiac less than $600.

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MODERN one-story plant set in outskirts of Cleveland has advantages of clean air and accessibility for trucks. Short stacks at either side and above window are all that's needed for gas-fired boilers.

CHEMICAL TREATMENT & FINISHING

Two heads may be better than one—but this doesn't always hold true for two plants, especially if they're 400 miles apart. This company found that . . .

Consolidation Pays Off Big

LATE LAST year Phoenix Dye Works completed a six-month building and machine-moving effort that is already showing a profit over its old two-plant setup.

Phoenix started in Chicago in 1894 as a skein dyer of cotton yarns. It was then a closely held, family-operated company. It remains so today. By World War I, dyeing was expanded to include worsted yarns. And in the early 1920's Phoenix started to dye cotton yarns on packages. Next move was to package dye singles worsted yarn in 1936.

Skein dyeing is now out of the picture entirely. But Phoenix handles every natural and man-made fiber on the market today.

In addition to yarn dyed on a commission basis, Phoenix also dyes up to 5,000 sweater bodies a day. About 90% of the cotton yarn handled these days is for the company's own account.

The old plant at Chicago was a multistory affair that was expensive to operate from the standpoint of material handling alone. What was more, smog in the heavily industrialized area where the plant was made it hard to keep light-colored yarns clean. Chicago was over 800 miles from the seaboard, which slowed Eastern deliveries — and liaison with that plant was just one more chore.

GETTING A NEW START

W. H. Susen, Phoenix president, bought a 12-acre tract of land on the outskirts of Cleveland in 1955 and built the 43,000-sq.-ft. branch plant with an eye to the future. It soon was clear that the one-floor, modern plant was the answer to more economical operation.

Also Cleveland means overnight delivery from New York. So the decision to close the Chicago plant was not long in coming.

By midsummer of 1960 Phoenix was ready with a 40,000-sq.-ft. addition to the Cleveland plant. Machinery from Chicago started to move in, and by year-end all operations at Chicago were shut down.

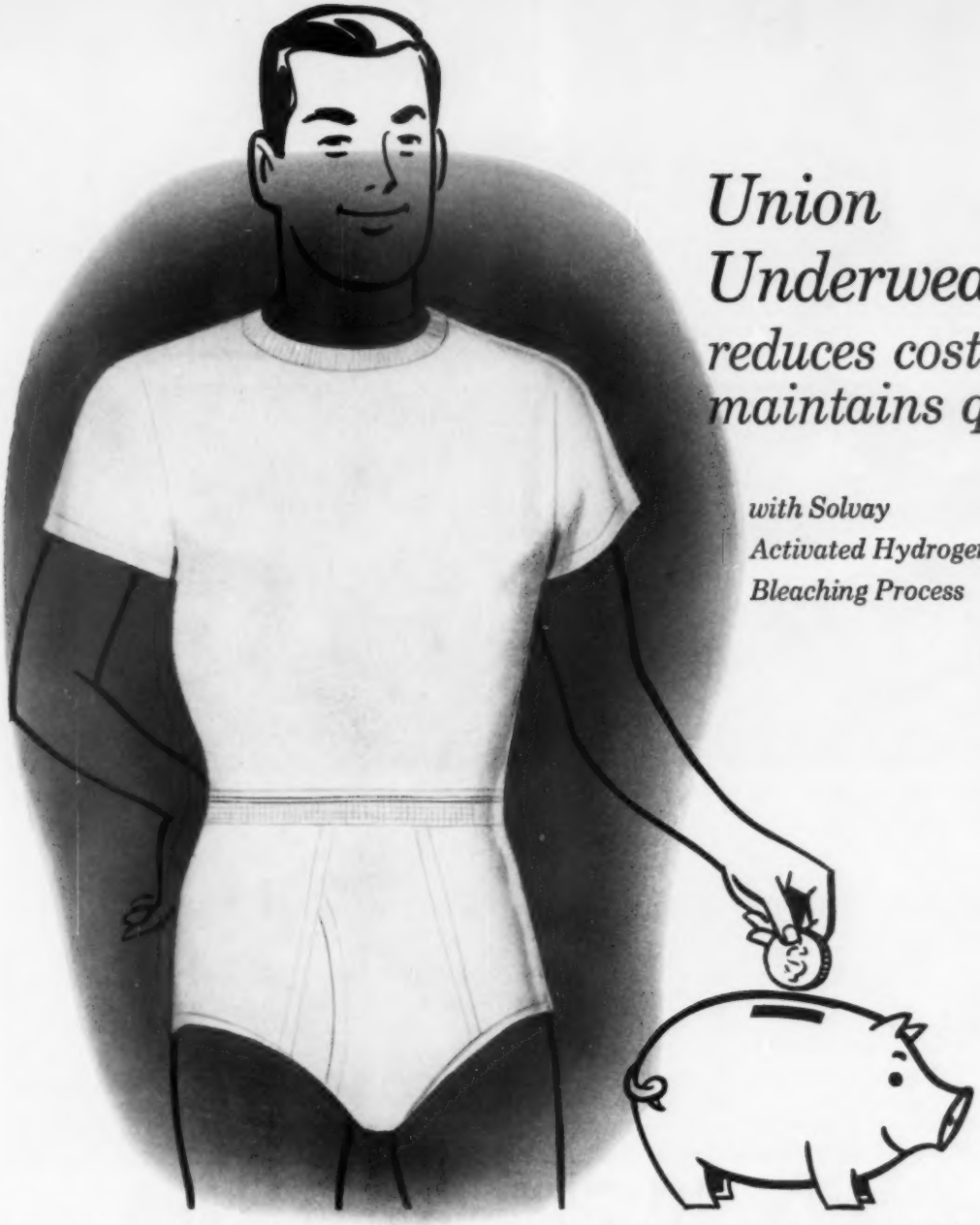
The present plant is rated by management as a $1½-million dollar investment. About $700,000 of this expenditure went to the package-dyeing department alone — for construction and equipment.

In the new layout, receiving and shipping are in adjacent areas at the back of the building. Next is the winding department, where incoming yarn is wound on Franklin springs or backwound onto cones after dyeing. A centrally located area is set aside for wrapping and packing of finished packages.

MACHINE FIRST CLASS

Phoenix has 20 package-dyeing machines, automatically controlled, ranging from 1,600-lb. capacity to 25-lb. units. Normal production is about 35,000 pounds of yarn per day. Twenty paddle machines used for sweater dyeing complete the principal dyeing machinery. Biggest of these will dye 600 pounds, the smallest, about 10 pounds.

. . . *Turn to page 90*



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with Solvay Activated Hydrogen Peroxide Bleaching Process

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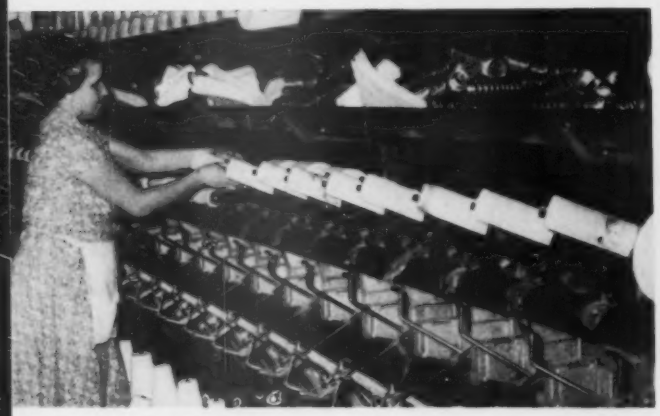
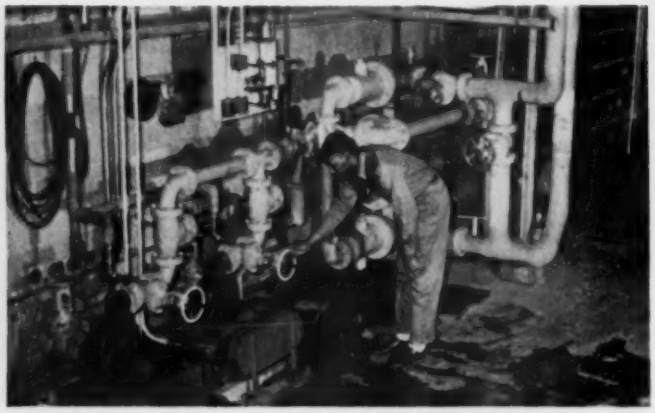
CIRCLE 89 ON READER SERVICE CARD

BUSY yarn-dyeing section of dyehouse includes heavy equipment that is used to load and unload dyeing machines.

LINED UP in two rows at one end of the dyehouse are paddle machines. Phoenix uses these units for dyeing sweaters.



WINDING readies yarn for dyeing. In this operation Orlon is being wound on springs with porous paper spring covers.



SAVING the equivalent of 3,400 pounds of steam per hour from dyeing-machine hot water is job of heat exchanger.

CONSOLIDATION PAYS OFF BIG . . . *Begins on page 88*

Although Phoenix still handles lots of cotton, the animal fibers and man-mades make up the bulk of the company's work. Orlon, Dacron, lamb's wool, Helanca, Dacron-wool blends, and 2/20s worsteds are major items in production today.

Processing follows pretty conventional lines for the various fibers. For worsted yarns, the first operation is to scour out natural and added oils with a detergent and modified alkali. The load is rinsed and then dyed with acid, chrome, or premetalized dyes.

All yarn is wound on Franklin springs. Older Franklin-type machines are modified to take Gaston County carriers. The most recent machines are made by Gaston County Dyeing Machine Co.

Phoenix uses carriers for dyeing polyester fibers. The truth is, though, that some of its dyeing equipment could be operated under sufficient pressure to get the higher temperatures, making carriers unnecessary.

Phoenix has a modern boiler house equipped with three Wickes gas-fired boilers. One is rated at 18,000 pounds of steam per hour; one is rated at 28,000 pounds of steam per hour; and there is a small unit that is used for a standby and week-end heating load.

STEAM COSTS CUT

A Ludell heat exchanger transfers an average of 60 degrees of heat from waste hot water to incoming cold water. About 150,000 gallons of hot water per day is needed for dyehouse purposes. Savings from the exchanger—6% of fuel cost.

Another way to figure savings from the exchanger is to apply a standard formula, as Phoenix does:

104=gpm. of water flowing through heat exchanger.

8.33=pounds of water per gallon.

60=minutes per hour.

60=rise in Btu's. per pound of water.

858=Btu's. as latent heat required to convert one pound of water to steam at 150 psi.

Then: $\frac{104 \times 8.33 \times 60 \times 60}{858}$

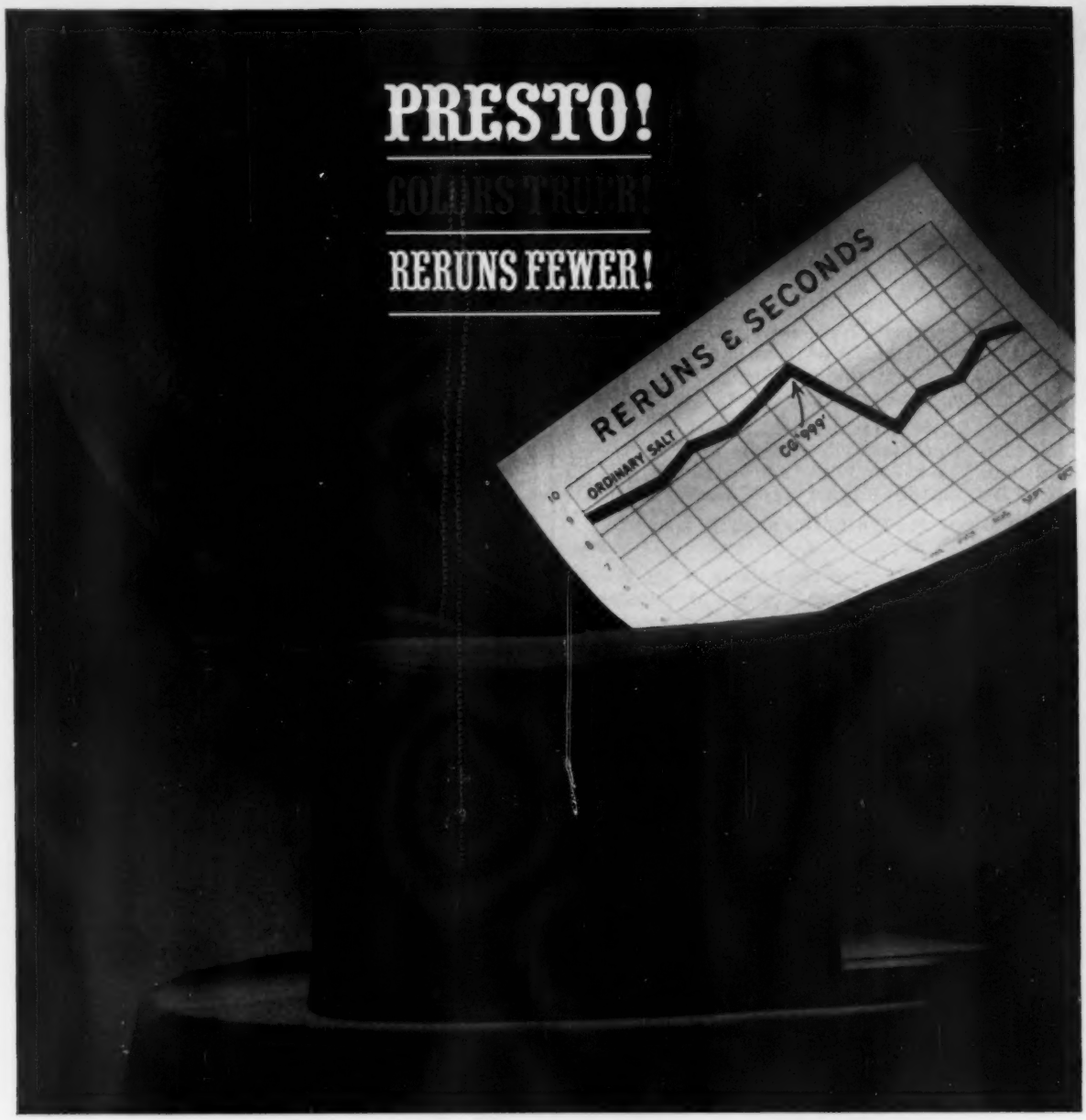
=3,634 pounds of steam per hour from and at 150 psi.

All water from dyeing is discharged into an open pit. Although cold rinses are not separated, the system evidently provides considerable help toward warming water.

The warm water is boosted to 160 F. before being sent to the 15,000-gal. hot-water storage tank.

Phoenix Dye Works is well satisfied with its new setup. President Susen foresees a general pickup in his business for 1961. Yarns for women's wear are moving well. And although early this spring men's wear yarns were moving somewhat slowly, over-all billing should be satisfactory.

And one thing is certain—the one-plant setup will cost less to run than the two units.



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New fiber-identifying tints are easy to use, easy to rinse out

POLYMER REPORT

Polymer RINSEFREE® Tints are fugitive sighting colors for identifying lots of fibers during carding, roving, spinning, slashing, weaving . . . also warp overtint. They are easy to use, easy to remove.

Dilution: Dilute to the lightest tint that will provide easy identification. Proportions of water vary from 2 or 3 up to 8 or 10 parts to one part of tint. Simply stir the color into hot or cold diluting water.

Application: Apply with fine spray, drip or wick – as uniformly as possible.

Stability: Tinted yarn or cloth shows no appreciable loss of color for at least 2 years – at temperatures of 60 to 100°F.

Scouring: A cold rinse is often enough. Use lowest practical scouring temperature. Soap or detergent is not generally required.

Matching: RINSEFREE tints are spectrophotometrically standardized for lot-to-lot uniformity.

Storage: Polymer RINSEFREE Tints are supplied as stable water solutions that do not settle out.

Fibers on which RINSEFREE Tints are applicable

Acetate
Acrilan, Type 16 and reg. (Chemstrand Corp.)
Arnel (Celanese Corp.)
Cotton
Creslan (American Cyanamid Corp.)
Dacron (E. I. DuPont)
Darvan (Celanese Corp.)
Dynel (Union Carbide Chem. Corp.)
Kodel (Tennessee Eastman Chem. Corp.)
Nylon 66 or 6
Orlon Types 25, 39, 42 (E. I. DuPont)
Verel (Tennessee Eastman Chem. Corp.)
Viscose
Vycron (North American Rayon Corp.)
Wool
Zefran (Dow Chemical Corp.)

Colors available

Red (5 hues) Rust
Yellow (2 hues) Gold
Blue (2 hues) Green

NOTE: Not all colors are completely rinse-free on all fibers. Removability also depends on whether yarns have been steamed.

Samples: Send list of fibers and blends being used and preferred colors (if any) for each type. We will be glad to send samples of suitable tints – together with complete directions. Polymer Industries' mill-trained textile chemists are available to help you.

Address: Polymer Industries Inc., Dept. TW6, Springdale, Conn. or Polymer Southern Div., Dept. TW6, Box 2184, Greenville, S. C.

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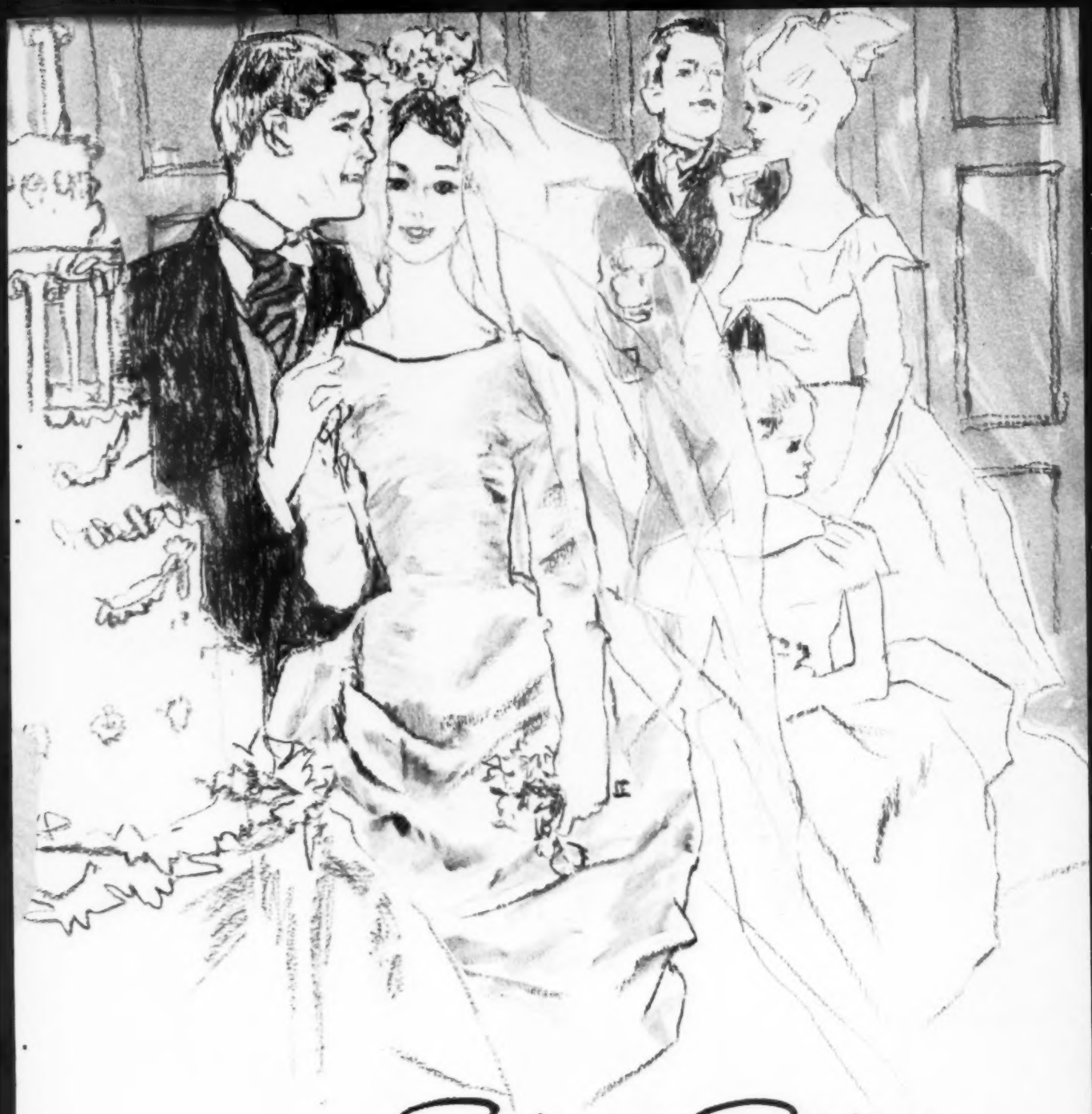

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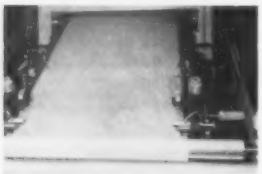
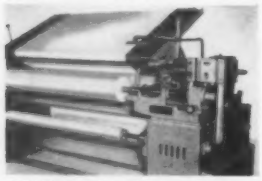


Medium-duty double unit with air sensing, positioning rails on tenter frame for higher speeds.

Photoelectric reflected light head senses cloth position by following printed line or selvage.



Light-duty unit with air sensing, applied to examining machine. Similar unit is used in tubing operation.

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- ★ Speed up printing operations while you keep accurate side register.
- ★ Non-clog air sensing head (patented) never touches cloth, works perfectly with all kinds of materials—linty, dusty, abrasive, high-pile, sized, wet or dry.
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- ★ Can be set to guide on the nap of carpeting, velvets, and other high-pile materials.
- ★ Cloth edge position, porosity, opacity, or reflectance sensed by air or photoelectric heads.
- ★ Slit without side trim!
- ★ Hydraulic actuation for unlimited power and speed, high frequency response.
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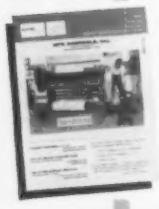

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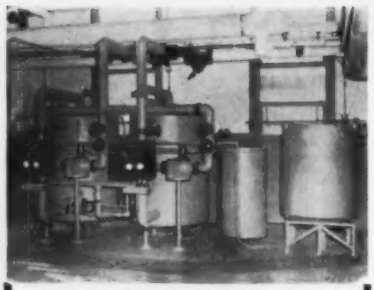

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KAY ANTI-WRINKLE SLAT EXPANDER

By guarding your processing line against wrinkling, the Kay Slat Expander:

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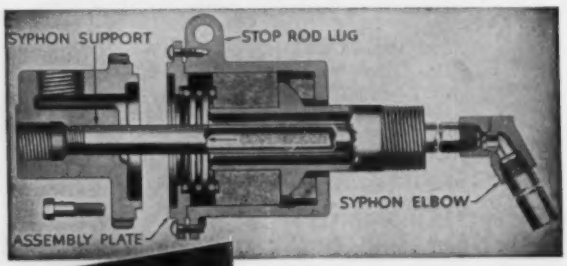

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CIRCLE 261 ON READER SERVICE CARD

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CIRCLE 262 ON READER SERVICE CARD

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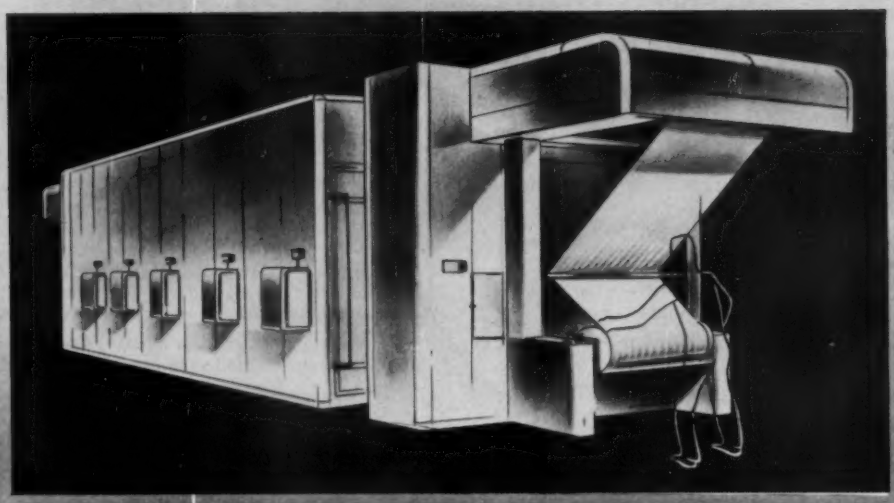

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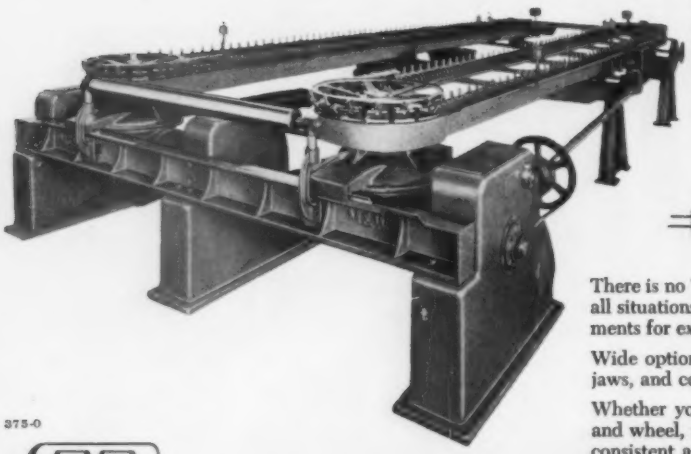
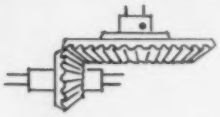
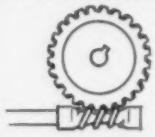
CIRCLE 108 ON READER SERVICE CARD

Vital Tenter Frame Options
Feature Marshall & Williams Engineering



These vital options include either bevel-gear or worm and wheel drive in units of 5 to 100 horsepower; frames from small tenterettes to large heavy duty tenters; rail widths in 7″, 14″, or 21″ — a range which makes it possible for Marshall & Williams to engineer a tenter frame built for your job demands.





There is no "standard" Marshall & Williams model peddled to fit all situations. Each tenter frame must meet your special requirements for exacting performance and operating economies.

Wide options are also afforded in the extensive range of clips, jaws, and controllers to handle any type of fabric.

Whether your choice is a bevel-gear frame or one with worm and wheel, narrow or wide rails, etc. etc., you're assured of one consistent and exacting standard of excellence where trial-and-error has been eliminated by the longest and widest range of successful acquaintance with tentering problems.

375-0

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CIRCLE 263 ON READER SERVICE CARD

Professor Lucius von Hausen, of aeronautics fame, reads in a balloon.

"Sort of keeps me on top of things," he says. Fair enough . . . but other engineers and executives prefer to read with their feet on the ground, especially when they're reading about business. Remember, a good place to read is a good place to think . . . and if you pay engineers and managers to think, encourage them to do more reading. Like so many successful men who read their "most useful" McGraw-Hill publications, they'll find the best place . . . home or plant, office or hammock. But wherever they read, remember, you share in the rewards.*

**Yes, when they read, you profit, too. Write on your business letterhead for a personal copy of booklet, "The McGraw-Hill Engineered Reading Program."*

Softness sold this towel...

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- Diethylene Triamine
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Remember, whether you need amines . . . UCON textile lubricants . . . anti-foaming agents for scouring and mercerizing . . . water-insoluble solvents to achieve deeper and fuller shades in dyeing . . . monomers for fiber syntheses . . . ethanolamines and TERGITOL nonionic surfactants for detergents . . . or other organic chemicals for finishing agents and lubricants . . . you'll find them at CARBIDE. With more than one hundred CARBIDE textile chemicals to choose from, you can take advantage of the increased savings of bulk buying in mixed tank car and mixed tank truck lots, or mixed carload lots in drums.

For information and help from experienced Technical Representatives, call your nearest CARBIDE sales office or write to: Union Carbide Chemicals Company, Division of Union Carbide Corporation, Dept. J, 270 Park Avenue, New York 17, N. Y.

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CIRCLE 105 ON READER SERVICE CARD

the COCKER SD-49 Spindle Driven Warper

A Battery of SD-49's in one of the World's Finest Mills

The Cocker SD-49 is especially designed to handle large, heavy section beams with any type yarn from finest deniers to heaviest tire cord yarns. It produces warps of any desired density at speeds up to 1000 YPM. Here are some of its outstanding advantages.

CONSTANT SPEEDS

An adjustable rheostat permits the selection of any desired speed. This speed is maintained by Cocker's extremely accurate system which measures the RPM of the presser roll instead of using less sensitive controls which are based on pressure or buildup. DC or clutch type motors provide smooth and gradual acceleration.

CONSTANT DENSITIES

Presser roll travel is in a horizontal plane to assist in providing a constant density during beam buildup. A large capacity pneumatic cylinder and an indicating gage permit operator to accurately adjust the loading of the roll against the beam and achieve any desired result.

DOUBLE-END BRAKING

Carrier and presser rolls and driving jackshaft have rheostat-controlled electro-magnetic brakes. The jackshaft brake applies braking action TO BOTH ENDS OF THE BEAM and prevents beam damage due to sudden stops—an exclusive Cocker feature.

VIBRATIONLESS OPERATION

The base of the SD-49 is heavy machined cast iron and all components, side frames, presser roll assembly, drive, etc. are mounted on it. This rugged construction permits vibrationless speeds up to 1000 YPM.

Specifications

- Standard Capacity 36″ dia. x 54¼″ width beam. Other diameters and widths available.
- Electric pre-determining counter clock
- Electric speed indicator
- Collecting eyeboard in back of machine
- Positive zig-zag front expansion comb
- Pushbutton controls on both sides of machine
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Emulsifiable A-C Polyethylene is permanent through multiple cleaning cycles. It increases abrasion resistance and tear strength . . . imparts extra crease resistance and better sewability.

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CIRCLE 107 ON READER SERVICE CARD

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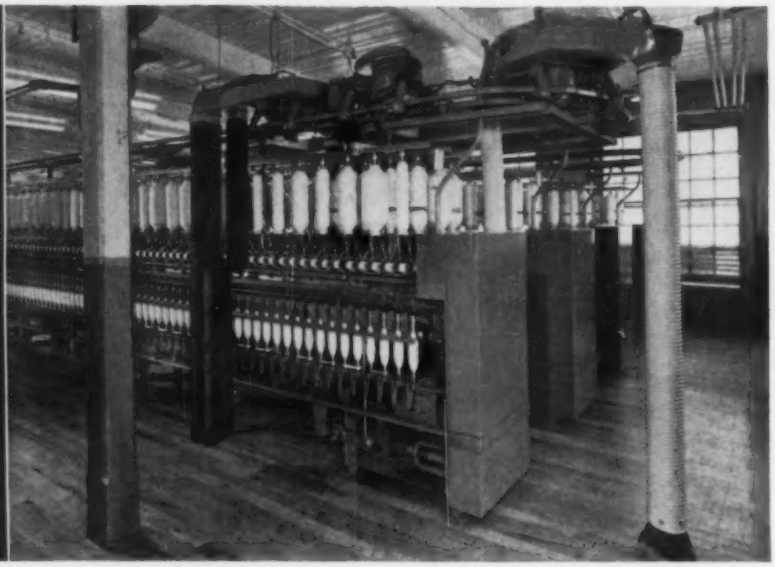
with Traveling Vacuum Cleaner



Entire upper-frame, under-frame, ceiling and floor are cleaned automatically and safely. Cleaner can be creel or ceiling mounted.

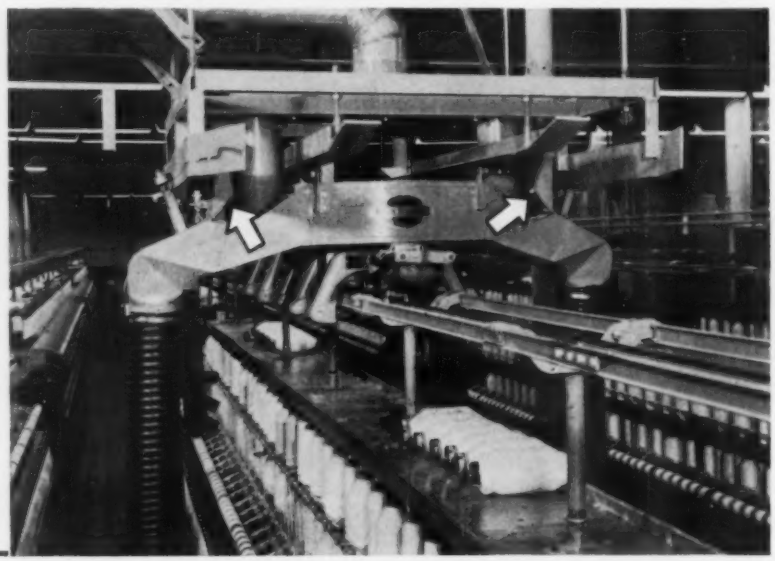
Stationary vacuum nozzles strip vacuum screen clean as unit travels. Doors over screen open and shut automatically.

LOW COST!

. . . one "vac" cleans up to 30 frames automatically!

Your machinery stays cleaner . . . your yarn turns out better . . . your mill's working conditions are immediately improved.

Every American Monorail Cleaner is engineered to do a specific job efficiently, safely, and with minimum maintenance. Initial cost is low for the amount of cleaning accomplished. Check with American Monorail for any type of automatic cleaning.



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MEMBER OF AMERICAN TEXTILE MACHINERY ASSOCIATION

Jamming Your Own Messages

If you make the all-too-common mistake of saying more than one thing at a time, you're likely to confuse, baffle, and upset your hearers. Here's solid advice on avoiding this communications pitfall.

"WHAT PAY check?" That startled question was asked by a chief accountant in self-defense. His boss, general manager of a large knitting mill, was calling from far-off Chicago. And the boss was furious. He was way off in a big city at a convention without any money.

What was even worse—the boss was blaming the chief accountant for his difficulties. Fact is, the boss had expected to get his monthly salary check in Chicago. He thought he had left clear instructions with the accountant to send the check along. But something went wrong.

What? The general manager jammed his own message. How? By sending two messages at once—one urgent, one not so urgent. Result? The urgent message simply got jammed out, and the general manager was left high and dry at the convention with nothing to do but borrow money from a competitor.

What happened was that on the day the general manager was leaving for the convention, he dictated a memo to the chief accountant asking for the compilation of a number of payroll charges that he would need first thing after returning from the convention. As he dictated the details of his request, another idea occurred to him: Why not ask the accountant to send his salary check to the convention? So he added a note to the memo that read: "By the way, please send my pay check to me airmail, special delivery at the Drake in Chicago. . ."

The chief accountant got the memo, glanced at it long enough to see that it was a request for a set of payroll statistics, and handed it over to a subordinate with an order for fast action.

The clerk, reading the instructions more carefully, saw the note at the end. He did a natural thing—assumed his boss, the chief accountant, had taken care of sending the general manager's check to Chicago. Result: The check followed the usual channel and was sent to the general manager's bank for deposit.

The moral of the story is this: It's folly to burden one of your communications with the job of carrying two different messages. Try it and you'll probably wind up jamming your own message.

SINGLE VS. DOUBLE TALK

Several years of research with managers at all levels have established that one of the important reasons business communications fail is this simple matter of saying more than one thing in one communication. It's difficult enough to convey the single idea in exactly the right way—without distortion or ambiguity. But to try two messages at once is something else again. When you clutter up that single idea with still another thought, you make it almost impossible to succeed.

The studies have shown that the substance, the meat, the gist of any message—spoken or written—is likely to fall into one of five distinct categories:

1. **You are stating a fact.**
2. **You are asking for facts.**
3. **You are stating an opinion.**
4. **You are asking for opinions.**
5. **You are exhorting—giving an order, making a peptalk, trying somehow to inspire or motivate.**

Mixing up any two of these substances, or the same type of substance—but on two different matters—destroys the effectiveness of the communication. Let's see how it works, if it's single talk, but breaks down if it's double talk.

GETTING A WRONG ANSWER

A plant in Boston was thinking about moving to more modern facilities far across town. Because of the travel problems this move would create for many of the employees, there was a wide difference of opinion about whether or not the plant should make the move.

Finally the boss decided to clear up all the confusion. He sent a memo to each supervisor asking for opinions on the projected move. But this is what the memo said:

"You know we are giving some thought to the advisability of transferring our production activities to the Monroe Street plant. I think this would be a very wise and advantageous move. What do you think?"

Do you think he got back the honest views of all the supervisors? Not at all! Most of us are intelligent enough to realize that when the boss says something in straight terms he is really asking for agreement. Chances are we'll disagree from time to time, but only when we have really strong feelings about it.

Here the boss is doing a classic double-talk job. He is stating an opinion and then asking for opinions in the same memo. He won't get what he asks for, so his communication will be a flat failure.

GIVING A BAD ORDER

We watched this little farce take place in a Georgia mill. It was early in the morning. Sonny Lang, supervisor, was making job assign-

By S. G. WILLIAMS
Management Consultant
New York City

ments for the day. He turned to one fellow and said:

"I'm shorthanded in the dyehouse today. How'd you like to help out over there?"

The employee made a face indicating his lack of enthusiasm for the dyehouse. Fifteen minutes later, when Lang looked his way again, the man was still there, waiting.

"What are you standing around here for? I told you to go over to the dyehouse!"

"Uh, I thought you just asked me about it. I didn't know you told me to go there."

Who was right, Supervisor Lang or the employee? Here are Sonny's words again: "I'm shorthanded in the dyehouse today." (A statement of fact.) "How'd you like to help out over there?" (A request for fact or opinion.)

Certainly this supervisor did not give the man an order, yet he thought he had. In his own mind he had. If he had said the one thing he meant to say, his communication would have worked. Instead, he said two other things.

FACTS VS. OPINIONS

In the very best of circumstances, both originators and receivers of messages mix up facts and opinion. This makes it all the more important for a single, plain statement of what is actually wanted to be the whole message.

How often have you asked a subordinate something like this: "Harry, what's wrong out in shipping?"

And Harry answered: "Joe never knows what he's doing out there . . . he's always loused up and he's loused up again."

You, of course, know just as much after this kind of exchange as you knew before you started it. In effect, you asked for facts and got nothing more than opinions. Why not say precisely what you want? Why not say something in this vein: "Harry, what are the facts about the problems in shipping?"

Then, if Harry does give you the same answer as before, you will know right away that he hasn't answered your question. By the question you ask, you'll not only have a far better chance of getting the information you want, but you'll also remind yourself of what it is you're after. Also, you'll alert yourself to recognize at once whether or not you get what you request.

MAKE IT SINGLE

The lesson that you should state facts or ask for facts, on the one hand, or state opinions or ask for opinions, on the other hand—but only one at a time—will be the key to better communications. It will help you to keep all your letters, memos, or conversations limited to a single idea. But that doesn't mean that you'll turn into the equivalent of a Gary Cooper or into the stereotype of the American Indian—a man whose whole vocabulary seems to be limited to ughs and grunts. Fact is, your memo can be three pages long, crammed with detail, full of suggestions, yet maintain its coherence and its single-mindedness. (But, as a general rule, you'll get far better understanding at the other end of the line if you keep your communications short—and pointed.)

That is why many speech and writing teachers stress the need to say what you want to say at the outset, fill in, and then repeat yourself at the end. Some even recommend repeating yourself once again right in the middle.

Here, picked from our files, is a good example. Toby, being volunteer secretary for the Christmas Party Committee last year, composed and sent out this memo:

"We want and need to know your lively ideas for the Christmas Party! We think that with your help we're going to have the best Christmas Party there ever was anywhere. Remember, it will be on the 22nd, at the Casino, from 3:30 to about 7 . . . 8 . . . 9. . . . But what do you think you'd like the theme, the idea, the feature attractions of the party to be? What kind of party?

"Please put on your thinking caps and taste caps and remembering caps and help us make the basic decisions that will make the party a big success. Give us your best ideas for our Christmas Party!"

Now you can't read that memo and have much doubt about what it is asking, can you?

The principle that makes that memo good is the same principle that popular authors, playwrights, and poets have known right along: However short or long the play, novel, or poem is, it must have one basic idea it is trying to convey. Otherwise, readers will have a hard time following the work, and therefore there won't be many readers of the work. Business and industrial leaders should remember the same lesson, so they won't confuse and exasperate their audience.

PREPARING AN AGENDA

The single-idea rule is one reason why good conferences usually have prepared agendas. You can discuss as many different subjects as you wish, if you discuss them one at a time. That means you introduce one subject, discuss it, summarize it, and close it off. You're ready to start the process all over again on another subject. But this kind of control is almost impossible without a written agenda to start with.

Nothing is quite as useless as a conference where the chairman begins with an opening along these lines: "Gentlemen, today we should reach some decisions about the new price, the quality problem, the great increase in turnover and our raw material situation. Now, what are some of your ideas?"

The fellow in charge has sent the minds of his group off in four directions at once. Unless someone redirects his thinking to one of the four, only chaos and wasted time will result.

GIVE IT A TRY

Practice in this endeavor will pay off. Try it at home with the family. Instead of the confusing, "Johnny, the car's a mess, why don't you wash it?", try "Johnny, please wash the car." (You may get the additional dividend of seeing Johnny's pleasure at knowing exactly what you're talking about.)

Communication is a complex business, but you can go a long step toward vastly improved communications if you pay attention to this cardinal precept: Don't jam out your own message. Say one thing.

CIRCLE 111 ON READER SERVICE CARD→

PROBLEM: Streaks in finished cloth

The cloth was woven from a blend of acetate and viscose rayon yarn. The streaking resulted from the acetate having an affinity for viscose dyes. Tests showed a slight akaline condition on the surface of the tube used as a carrier for the acetate yarn. This was the cause of the trouble.

Sonoco then developed tubes having surfaces within the neutral range. These carriers had no effect on the yarn and the streaking problem was eliminated.

Technical service of this type is an added benefit when you buy from Sonoco. *Only Sonoco,* in its field, provides the continuous research, product development and integrated manufacturing needed to meet the ever-changing techniques of the textile industry. *Let Sonoco's more than 60 years' experience help you!*

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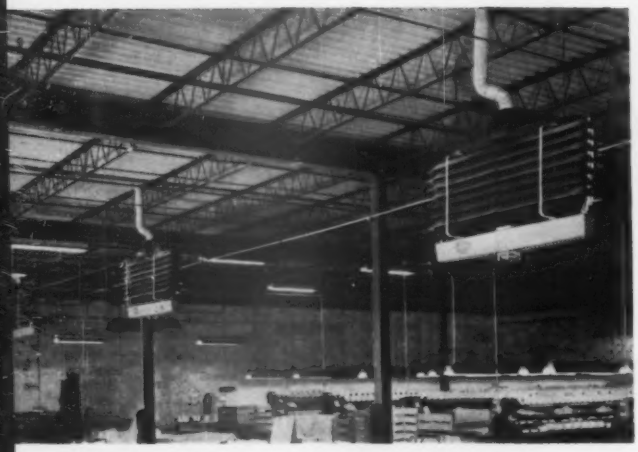
TEXTILE WORLD . . . COST CUTTERS



Heaters Cure Lint Problem

If you have problems with lint-clogged unit heaters in yarn-winding areas, take a tip from Phoenix Dye Works, Cleveland, Ohio.

Phoenix found that steam-unit heaters clogged up so badly that every two weeks it took an entire day to unclog the heat exchanger. Trouble occurred mostly in the winding department.

Phoenix switched to Panelbloc gas-fired infrared heaters (Bettcher Mfg. Corp., W. 61st St. at Clark Ave., Cleveland, Ohio) to get around this trouble. The heaters are directional and do not have fans.

Result—adequate heating, no drafts, and better working conditions since lint doesn't fly about. Maintenance costs are nil, for a quick blowoff with an air hose is all that is needed to keep the units clean.

Wood Roll Cuts Finishing Costs

A large Southern finishing plant is making significant savings with composition wood-pad rolls installed in two finishing ranges.

Water content of goods squeezed out in these pads is 50%—about 40% less than the plant can get with other pads.

The Bently roll (Rodney Hunt Machine Co.) is a built-up roll, made of thin sheets of a wood combination that are compressed over a steel mandrel.

Finishing results are essentially the same as those you would get with the old-fashioned maple-metal roll combinations.

An added advantage is that the composition rolls run four to five times longer between grindings than natural wood rolls.

Cuts Sweeping Time at No Cost—Almost

Linn Mills Co., Landis, N. C., is saving one sweeper per shift by using an ingenious mill-made mechanical floor sweeper that costs practically nothing to construct.

The floor sweeper consists mainly of clearer cloth tied to the nozzle of the frame cleaner. As the frame cleaner follows its prescribed course, the clearer cloth follows behind and picks up lint and waste.

The cloth is weighted so that it polishes as it cleans. In case of a snag, the cloth is released from the cleaner by a spring-loading attachment.

The floor cleaner covers one-half of the alley as it comes forward and the other half as it returns. At the end of the alley, the cloth flips over when the cleaner reverses direction—thus depositing the waste where it can be easily removed.

Continuous Hot Water at No Cost

Need hot water at a new place? Maybe a continuous supply won't cost you one cent. Look at what Villa Rica Hosiery Mills did at Villa Rica, Ga.

New offices and rest rooms were built recently, and were far from the main steam lines of the mill. Rather than run a steam line 200 feet from the boiler house with the resulting loss of heat, Villa Rica bought an electric water heater (General Electric).

Mill Manager Jim Vaughn watched the power bill to see what the heater was costing. There was no additional power cost. He found that his power-cost category took care of the extra power consumption.

Now there's a constant supply of hot water in the offices for making coffee, and employees always have plenty of hot wash water.

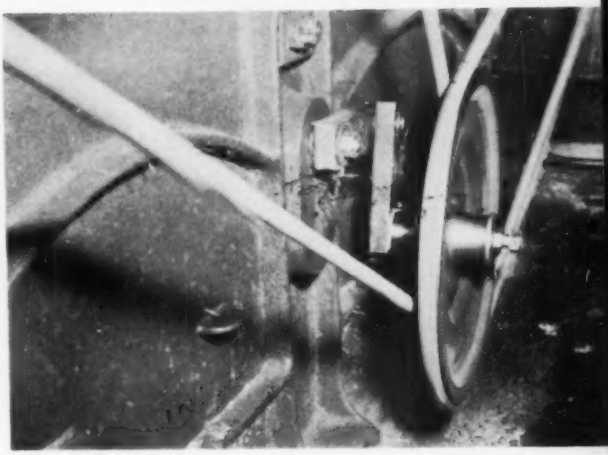
Hinged Arm Cuts Belting Costs

Carolina Mills, Inc., Newton, N. C., used to have excessive belt breakage and wear on its doffer comb belts at the cards. The stationary arm, bolted onto the side of the card to hold the pulley, had no give.

When the belts were not adjusted properly as to tension, there was excessive strain or slippage.

Superintendent C. A. Irby solved this problem by asking the mill shop to make the hinged arm, appearing behind the pulley. The device consists of two pieces of ¾ xl-in. steel about 6 inches long hinged on a stud. The flexible arm equalizes tension on both belts.

With this arrangement on all cards at Mill No. 3, belts now last twice as long as before. No actual cost studies have been run on the improvement, but management is certain that savings are substantial.



Machine Cleans Clearer Rolls Fast

A recently developed spinning clearer-roll cleaner (Keown Co.) is cleaning 360 clearers per hour at Flagg-Utica Corp., Grantville, Ga. This is ten times as fast as hand cleaning, and it's safe for operators too.

The cleaner is in a portable cabinet designed to pass through narrow aisles. The cabinet has a waste bin with a screened clean-out door on the back.

Clearers to be cleaned are placed on an indexing device that rolls them forward until each one makes a brief contact with the revolving clearer rolls.

In about one second these rolls pick the clearer clean and fluff up the nap on the clearer cloth, which conditions the cloth for better waste pick-up.

The machine is powered by a small motor running on 110 or 220 volts, as specified.

. . . Turn the page

COST CUTTERS... *Begins on page 112*

How to Heat Your Storeroom Free

Valdese Mfg. Co., Valdese, N. C., gets the benefit of waste heat from its package dyehouse by an inexpensive duct-and-fan arrangement (rear, center) that delivers to a warehouse area.

This portion of the warehouse was originally of open-side construction and too cold for winter work.

Valdese enclosed the rear with plywood and then built a plywood duct leading to the package dyehouse. A 36-in. ventilating fan installed in the duct pulls hot air from near the ceiling of the dyehouse and delivers it to the warehouse.

The dyehouse is lower than the warehouse, so the duct is short and pitched to aid the movement of the hot air. Previously, dyehouse exhaust was wasted on the outside.

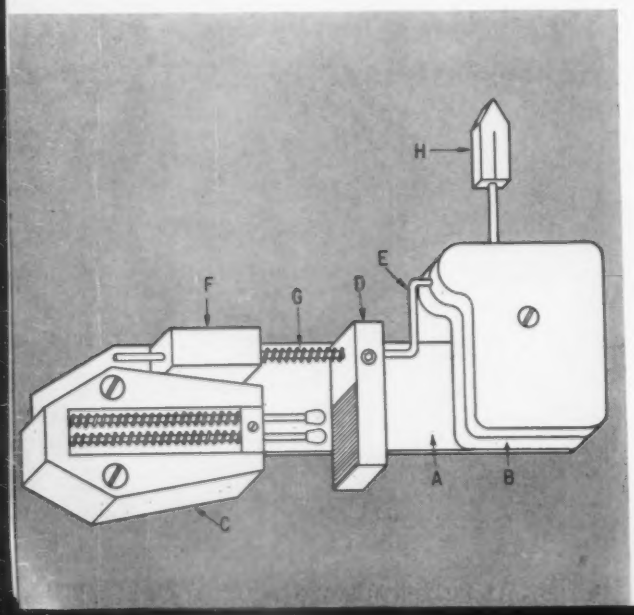
Ticket Cuts Record Keeping 25%

By combining all production- and quality-control reports on one production-control card (Royal McBee Keysort), Lawrence Mfg. Co., Lowell, Mass., has cut over-all record-keeping costs 25%, increased production 2%, and reduced second-quality fabric 5%.

With the ticket, Lawrence keeps an accurate check on fabric quality at each stage of production so that any condition in the plant that affects quality can be corrected immediately.

The company produces a variety of knitted cotton backing, combining, and lining fabrics for consumer and industrial products. Knitting schedules are set up a week ahead by the production superintendent.

A master knitting ticket is created by the superintendent's schedule. Then two sets of stub tickets are produced, one set for each roll of fabric.

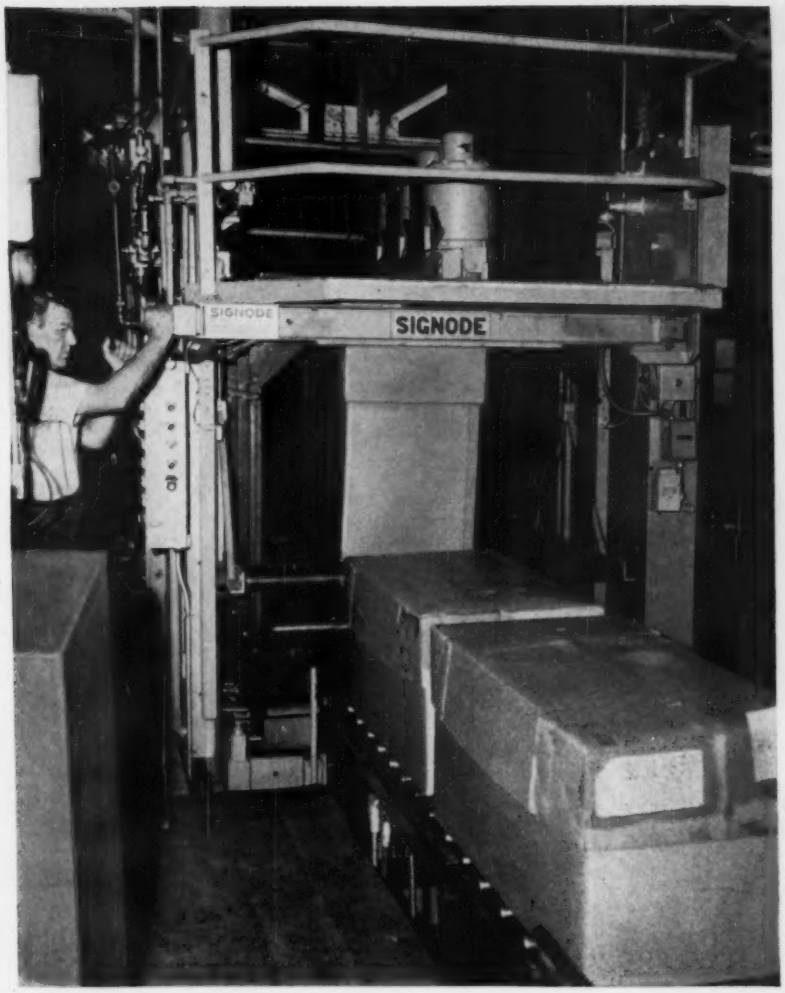


Mill Cuts Bobbin Costs 25%

Do you have both single-shuttle looms with mechanical feelers that run all-wood bobbins and multishuttle looms with metal-ferrule feelers that use metal-ferrule bobbins? Then you'll be interested in how a South American mill with the same setup switched all its looms to all-wood bobbins. Textiles Panamericanos, Medellin, Colombia, is the mill that reduced its yearly costs of bobbin replacement 25%.

The regular feeler stand is removed from a multishuttle loom. Substitute stand *A* in the sketch is made from $\frac{3}{16}$-in. metal.

Here's how the feeler setup works: When the filling runs down to the bunch on the bobbin, feeler tip *H* actuates connecting level *E*, which moves the fiber plate *D* outward so that the metal plate touches the two feeler tips of electric feeler *C*. Then the grounded circuit of the electric feeler transfers the filling.



One man weighs, marks and straps a volume flow of textile cartons

with a Signode Texomatic CSM

With a Signode Texomatic compression strapping machine, this operator weighs, marks and straps a mixed flow of cartons as they move from the textile production line. At the push of a button, the Texomatic CSM automatically lifts to compress the load, then feeds, tensions, seals and severs one, two, or three straps simultaneously in about 12 seconds. This gives the operator sufficient time to weigh and mark the cartons without interrupting their flow, and permits maximum savings in time, effort, and attention.

The new Texomatic is powered by three superbly-engineered M-20 heads with the known ability to operate continuously without attention through a million cycles or more. The M-20 strapping units are simply designed, easily accessible, and powerful enough to prevent overloading at fast speeds and high tensions. The sturdy, rugged, rack and pinion gear assembly gives positive action in raising and lowering; construction of the Texomatic is greatly simplified through the "lift to compress" action.

Let an experienced Signode man help you select the Texomatic compression strapping machine that meets your particular requirements. Write:

SIGNODE

First in steel strapping

SIGNODE
STEEL STRAPPING CO.
2642 N. Western Avenue • Chicago 47, Illinois
Offices Coast to Coast, Foreign Subsidiaries and Distributors World-Wide
In Canada: Canadian Steel Strapping Co., Ltd., Montreal • Toronto

CIRCLE 115 ON READER SERVICE CARD 115

SHE KNOWS HOW TO HELP HER BETTER HALF LOOK HIS BEST

Make sure the tag says Arnel triacetate or Fortrel polyester! Shopping for herself and the children, she's learned that these tags are found only on fabrics which have met demanding quality-control standards. And she's learned through experience that these fibers keep clothes looking fresh as new with a bare minimum of care. So when she's buying clothes for her husband—or helping him buy them—she goes out of her way to find these dependable Celanese Fibers.

Arnel is soundly established in menswear—it's featured in many fine lines and backed by national advertising the year around. New Fortrel got off to a brilliant start this year—and plans are in the works for an all-out menswear campaign in '62. To capitalize on this acceptance, be sure to include fabrics with Arnel and Fortrel in *your* line! Celanese Fibers Company, 180 Madison Ave., N. Y. 16 (a division of Celanese Corporation of America).

Celanese® Arnel® Fortrel® is a trademark of Fiber Industries, Inc.

Celanese Contemporary Fibers

What's New This Month in . . .

Fibers, Yarns, and Fabrics

What's Ordelaine?

It's a new blended yarn. It's soft, natural looking, and has a wool-like hand. It's also pill-resistant. And it's slated for use in sweaters and other knitwear.

The new yarn, a blend of 50% Orlon and 50% wool, is available at the Yarn Sales Department, J. P. Stevens & Co., Inc.

Another Curon Use

Evans Mfg. Co. is using Curon polyurethane foam as a backing for its new group of machine-washable, tufted rugs. The company has introduced the group, called Poodle-Tuft, for fall selling.

The group of rugs includes a variety of shapes and styles. Avisco rayon is the yarn used.

Half and Half

Corval and Acrilan are now in new laminated knits at Allen Knitting Mills. It's a 50-50 union.

The fabrics are laminated to Scott Apparel or Vomar foam. Slated use: Women's coats and sportswear.

Nylon Hits High

Production of nylon tire cord hit an all-time high in 1960—139-million pounds, an increase of 15-million pounds over 1959. So said the Bureau of Census in its latest report on nylon trends.

And Du Pont reported that industry figures show almost 50% of all the passenger-tire-replacement sales were in nylon-cord tires. This figure was an increase of 12% over the previous year 1959.

Nylon-cord tires for trucks and buses also showed a gain last year. Over 55% of all replacement tires in this market were reinforced with nylon—an 8% gain over 1959. And more than 30% of original-equipment truck and bus tires were made with nylon.

Textured Tufteds

A. & M. Karagheusian, Inc., manufacturer of Gulistan carpet, has introduced a new tufted carpet, called Futurity.

The new carpet—made of continuous-filament bulk nylon—is a random-looped, deeply textured pile. It's available in monochromatic tones. These color combinations give the carpet an appearance that lies between a solid color and a tweed.

Futurity comes in 14 colors and retails at $9.95 per square yard.

Trends Reported

The beige, tan, and cocoa color groups were in greatest demand in pile-upholstery fabrics during the first quarter of this year, the *Joan News Letter* reports.

Interest in brown also increased during this period. These color groups made up 55.8% of consumer demands for these fabrics.

Consumer interest also improved in natural, black and white, amethyst-orchid, and gold.

Where were the declines?—in blue, turquoise, aqua, charcoal, black, light green, red, and gray.

Stretch Is Tripled

To meet growing market demands, U. S. Rubber Co. has tripled its looms producing stretch fabric.

According to Stuart Brown, president of Franklin Mfg. Co. (selling agent for the contour cloth), the fabric was primarily designed for women's slacks. Now it's being used in skirts and children's wear. Mr. Brown also noted a sharp demand for the fabric in over-the-counter sales.

U. S. Rubber manufactures the nylon-acrylic-viscose fabric at its Winnsboro, S. C., plant. It's now working on new developments and hopes to introduce new stretch fabrics next year.

Something's New . . .

. . . at Roxbury Carpet Co. It has added two new all-wools to its carpet collection. Both have a bulky, hand-crafted look.

One—called Scottish Thistle and offered by the company's Whittall Division—is a Wilton. Solid-color, 3-ply yarns rise above tweedy, 2-ply background yarns. Available in 12- and 15-ft. widths and in seven colors, this carpet retails at $12.95 per square yard.

The other addition to the Roxbury line is a new twist. This carpet is made by the company's Southern mill. Called Tarragon, the carpet is available in 11 colors and 12- and 15-ft. widths. It retails at $9.95 per square yard.

Southward Bound

Tuff-Tarp, a vinyl-coated nylon fabric manufactured by Farrington Texol Corp., has gone south of the border.

It's making its appearance in Mexico in air-supported grain-storage buildings. Almacenes Nacionales de Deposito, S. A., is using these structures to solve its problem of temporary grain storage.

CID Air Structures (Chicago) and Childres Canvas Products, Inc. (Dallas), have built 47 such buildings—with a total volume of 3.7-million cubic feet—for the Mexican company. For these structures, CID and Childres used 42,000 yards of Tuff-Tarp fabric.

Ashley Roberts, Assistant General Superintendent of the China Grove Cotton Mills, China Grove, N. C., watches as Armstrong representative H. H. Jordan measures diameter of Accotex J-490 Cots in service on these frames. Frames are also equipped with Accotex NO-7876 Aprons.

Armstrong Accotex Cots and Aprons can help you keep yarn quality high

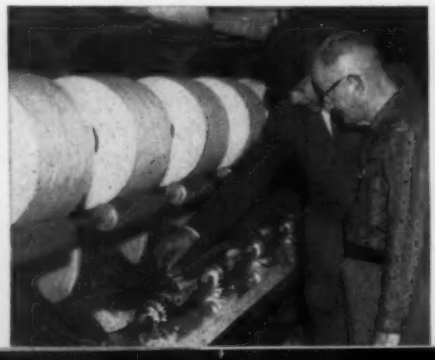
It takes the right combination of complex mechanical elements and human skills to turn out high quality yarn. Among the mechanical factors, the spinning cots and aprons are critically important!

Hundreds of mill men standardize on Armstrong Accotex products. These men know that the Accotex line contains a wide range of materials engineered to spin quality yarn on any drafting system . . . with any fiber or blend.

They also know that an important part of every transaction with Armstrong is the skilled, helpful service of their Armstrong representative. Armstrong Cork Company, Industrial Division, 6506 Dauphin Street, Lancaster, Pa.

S. R. May, Jr., Vice-President and General Superintendent, looks over the Armstrong textile supply catalog with H. H. Jordan.

C. C. Morrow, Overseer of the No. 2 card room, examines comber web with Jordan. Accotex NO-728 Covers are on detaching rolls.



Gurney Norton, Overseer of the No. 3 card room, learns from Harold Jordan a quick way to check rolls for excessive wear.

Jordan chats with roll shop foreman W. A. Russell about the operation of an Armstrong Type "H" cot assembly machine.

Armstrong

ACCOTEX COTS AND APRONS

CIRCLE 119 ON READER SERVICE CARD

TEXTILE WORLD . . . News from the Mills

Samuel J. Aronsohn, Inc., New York, N. Y., has announced plans to build an addition to its Petersburg Silk Mill with a resultant increase in jobs at the plant. The 80- x 178-ft. addition will cost an estimated $100,000.

Bay State Dyeing & Finishing Corp., Bondsville, Mass., is building a new plant at Morganton, N. C. Construction is expected to be completed within six months. Plant size and cost was not disclosed.

Beaunit Mills, Inc., New York, N. Y., has concluded an agreement with E. I. Du Pont de Nemours & Co., Wilmington, Del. By the terms of the agreement Beaunit acquires exclusive rights to secret, technical information on processes for rayon yarns.

Carolina Mills, Inc., Maiden, N. C., has purchased Trenton Cotton Mills, Inc., with plants in Gastonia and Statesville, N. C. The sale was arranged through a stock exchange. This will increase Carolina's capacity by 36,000 spindles.

Collins & Aikman Corp., New York, N. Y., (Yarn Div.), has severed its arrangement with T. S. Molyneux, Inc., Philadelphia, Pa. Salesmen have joined the company to cover the territory previously handled by the selling agent.

Corlin Processing Co., Landis, N. C., has announced plans to expand the capacity of its yarn dyeing plant. Costs of the added facilities total about $90,000. Plant capacity at present is 100,000 pounds per week.

The Elk Cotton Mills, Fayetteville, Tenn., and Brower Mills, Inc., Hope Mills, N. C., have merged as a result of an exchange of stock.

Erwin Mills, Inc., Durham, N. C., has revealed tentative plans for a $750,000 addition to its No. 4 mill in Durham. The departments to be modernized are bleaching, finishing, and sewing.

Kayser-Roth Hosiery Co., Inc., New York, N. Y., has begun an expansion program that calls for a 9,600-sq.-ft. addition at its knitting division, Hickory, N. C. New equipment includes 200 men's hosiery machines.

The Kendall Co., Boston, Mass., will launch a million-dollar rehabilitation of the preparatory departments of its Wateree plant in Camden, S. C. All yarn preparation and warping will be modernized, plus an air cleaning and changing system, and a new warehouse.

Kenyon Piece Dye Works, Inc., Kenyon, R. I., has purchased the plant of the Peace Dale Braiding Co., Peace Dale, R. I. The 50,000-sq.-ft. building will be used initially for storage.

Kimberly-Stevens Corp., New York, N. Y., has acquired the idle plant of Robertson Bleachery & Dye Works, Inc., New Milford, Conn. The plant will be used to manufacture nonwoven fabrics. The company also announced plans for a modest expansion of its nonwoven fabrics plant in Westfield, Mass.

Millburn Mills, Inc., West Warwick, R. I., is beginning limited operations in its cotton dyeing and finishing plant at Durham, N. C., following remodeling and construction of a $60,000 addition.

Mount Hope Finishing Co., Butner, N. C., has announced it will discontinue its operations at Henderson, N. C. and move to Butner.

Reeves Brothers, Inc., New York, N. Y., in a continuing expansion program has licensed the following firms to carry out Reeves' patented heat-laminating process and to use the Curonized trade mark when the lamination has been made with Curon foam: Sunbury Textile Mills, Inc., Sunbury, Pa.; Patex Inc., Wayne, N. J.; and Kenyon Piece Dye Works, Inc., Kenyon, R. I. Reeves Plastics, Inc., Spartanburg, S. C., has expanded its Central Bergen Industrial Terminal, Garfield, N. J., to a total area of 41,000 square feet.

Spartan Mills, Spartanburg, S. C., has announced plans to build a $300,000 addition to its Beaumont Mill. The project includes a two-story structure linking Beaumont's two present plant units. More Draper X-3, 60-in. looms will be added to provide greater efficiency.

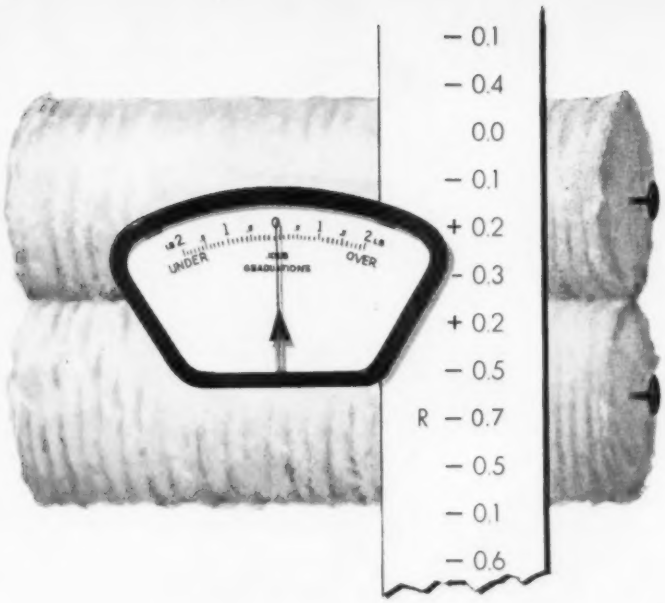
J. P. Stevens & Co., Inc., New York, N. Y., is considering construction of an additional plant in Roanoke Rapids, N. C., to produce soft towels. The company also announced it is adding 7,000 square feet of manufacturing space and 4,000 feet of space for a new air-conditioning system to its plant in Tuxedo, N. C.

United Elastic Corp., Easthampton, Mass., has purchased a 204-acre tract on the Little Dan River, Mt. Airy, N. C. The company has no definite plans as to building on the new site.

United Piece Dye Works, Inc., Lodi, N. J., has announced the opening of a new modern plant in Bluefield, Va. The 147,000-sq.-ft. addition is equipped to handle a wide range of fiber blends.

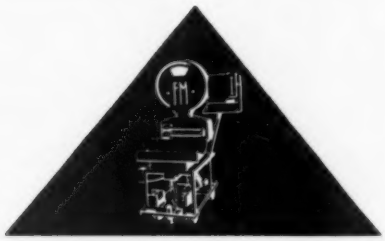
United States Rubber Co., New York, N. Y., has named the Sam M. Butler Co., Charlotte, N. C., as exclusive selling agent for its synthetic and combed-cotton knitting yarns in Virginia and the Carolinas.

Whitmire Hosiery Mills, Inc., Whitmire, S. C., has completed a 6,000-sq.-ft. addition to its plant. The cost of the expansion was $40,000, exclusive of machinery. New equipment will bring production up to 224 seamless hosiery units.



BETTER PROFITS COME WITH POSITIVE LAP WEIGHT CONTROL:

FAIRBANKS-MORSE AUTOMATIC PRINTING LAP SCALE



now . . . maximum quality control

with this precision F-M scale—designed exclusively for the textile industry—weighing is quicker, more easily handled . . . and more profitable.

With Positive Lap Weight Control the weight of each lap is first printed on tape locked in the scale, then transmitted to the dial, eliminating manipulation to bring laps into tolerance.

Overweight and underweight are indicated to the nearest 1/10 lb.—an F-M exclusive. Rejects beyond predetermined tolerances are identified by an "R" that is printed next to the weight. The tape itself provides a permanent, accurate record readily available for inspection at any time.

This textile scale has the F-M "Floaxial" Dial mechanism for fast, automatic readings. The shape of the Contour Lap Pan protects the lap . . . means less waste loss. And since the scale has electrical mechanical circuits, any required maintenance can be handled by the mill electrician. And, too, F-M scales are of the highest accuracy and are backed up by 130 years of precision craftsmanship.

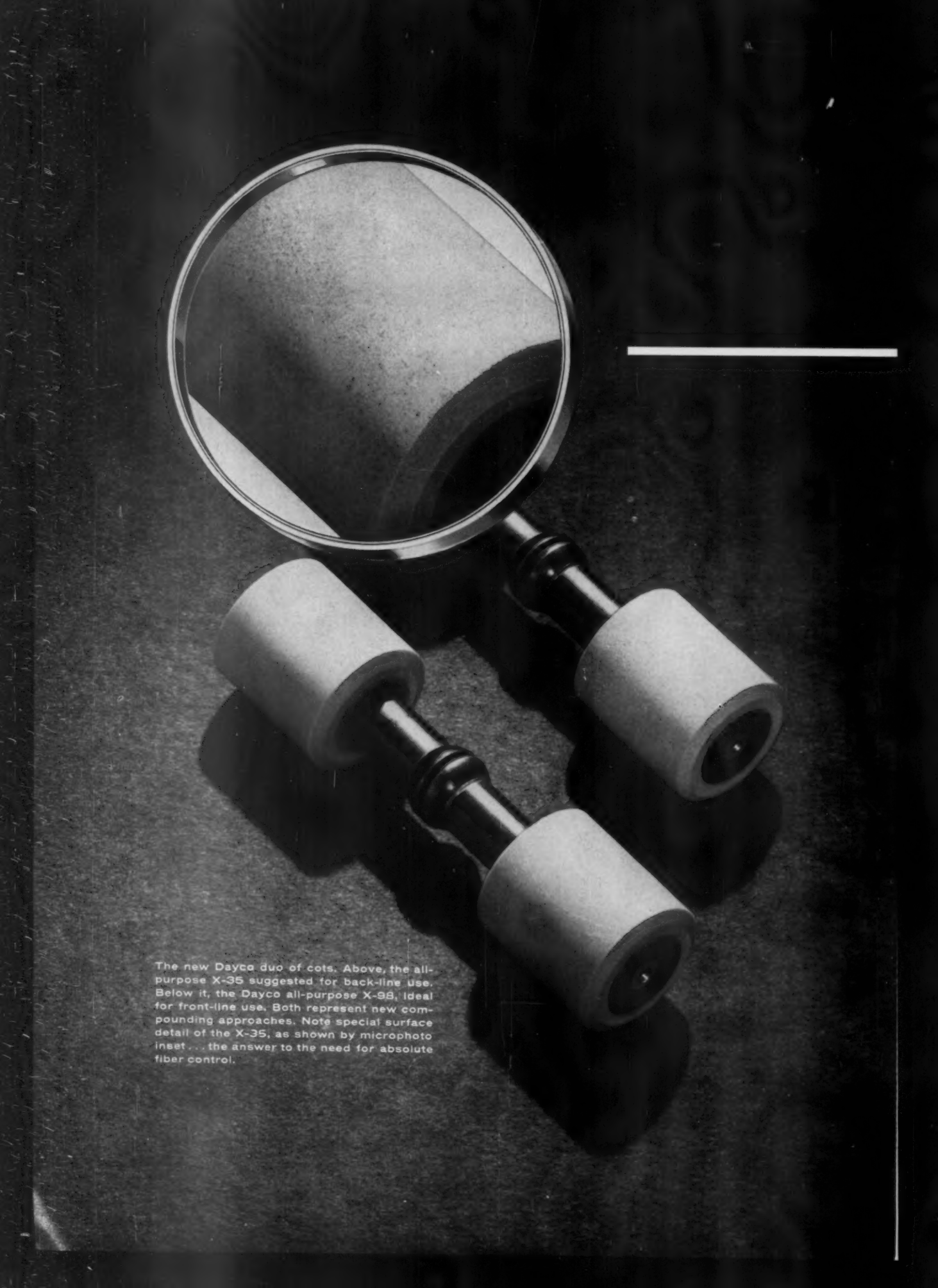
For further information write: **C. G. Gehringer, Director of Marketing; Scale Division, Fairbanks, Morse & Co.; 19-01 Route 208; Fair Lawn, New Jersey.**

FAIRBANKS MORSE

A MAJOR INDUSTRIAL COMPONENT OF

FAIRBANKS WHITNEY

CIRCLE 121 ON READER SERVICE CARD 121



The new Dayco duo of cots. Above, the all-purpose X-35 suggested for back-line use. Below it, the Dayco all-purpose X-98, ideal for front-line use. Both represent new compounding approaches. Note special surface detail of the X-35, as shown by microphoto inset . . . the answer to the need for absolute fiber control.

Dayco Presents Two All New, All Purpose Cots The X35 and X98

New ingredients and special surface give positive yarn control with every fibre— natural, synthetic or blend.

Dayco proudly presents another record-breaking achievement—an outstanding pair of all new, all-purpose cots, the X-35 and the X-98. Compounded with elements never used in cots before, they represent the first major improvement in cot performance offered in many years.

Ideal when used in combination, with the X-35 on the back line and the X-98 on the front, these cots are *all-purpose* in the fullest sense. Both handle any fiber...yarn of any size from 3's to 140's...on any type of system... with greater yarn uniformity and greater efficiency of operation. Even on Dacron and other difficult blends, the X-35 and X-98 show outstanding drafting results.

AN ENTIRELY NEW ELEMENT

The new Dayco X-35 is truly a revolution in cot engineering. Because it is compounded with an entirely new element, its heavy duty surface assures positive grip, breaks up surface tensions on all fibers.

The new Dayco X-98, front-line companion to the X-35, introduces a completely new surface formulation to the textile industry. On the finest or coarsest yarns the Dayco X-98 is a superior performer.

The Dayco X-35 and X-98 have undergone over 12 months of thorough testing under the toughest mill conditions on all types of systems and fibers.

MILL TESTS PROVE SUPERIORITY

Results prove that these new Dayco Cots are top performers. Static problems so common with synthetics are reduced to a new low. Coefficients of friction of the X-35 and X-98 prove ideal for any drafting task. Their lack of affinity for all fibers produces cleaner spinning with less fiber left on the clearers.

Whatever your drafting requirements or equipment, test run the all-purpose Dayco duo—the X-35 and X-98. You can expect to set new high standards in your yarn production, regardless of the fiber.

TRY THE ALL-PURPOSE TEAM

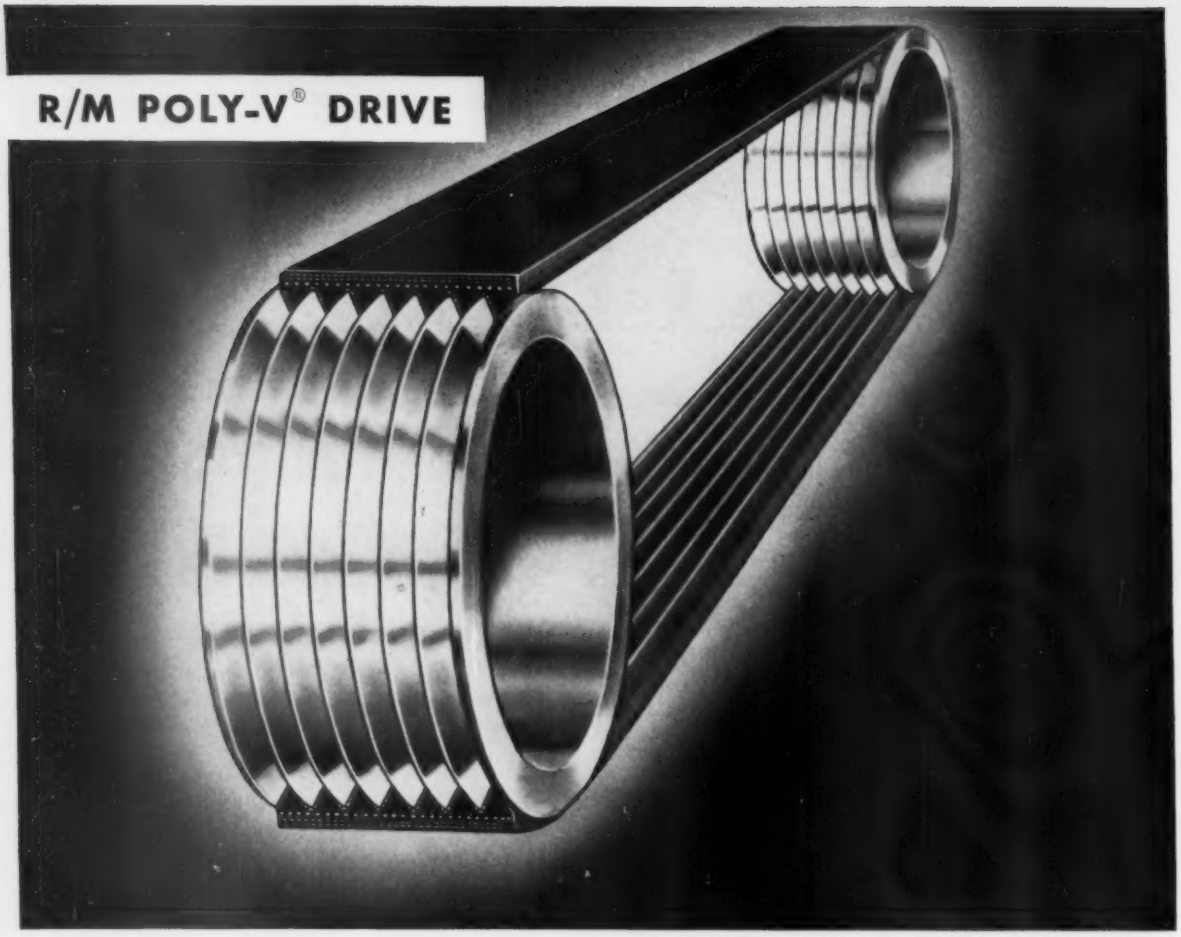
Go Dayco all the way—team up the new advanced Dayco X7 *all-purpose* apron with these revolutionary new *all-purpose* Dayco cots and expect superior drafting performance. You'll get it!

Ask your Dayco Representative to set up a trial installation. Phone or write Dayco Textile Products Co., 401 South Carolina Bank Building, Greenville, S. C. Overseas plant: The Dayton Rubber Co. Ltd., Dundee Scotland.

Dayco TEXTILE PRODUCTS CO. Dayco

Divison of Dayco Corporation

CIRCLE 123 ON READER SERVICE CARD



Single unit design delivers more power in less space . . . with more reliability

Poly-V Drive features a *single*, endless V-ribbed belt across full width of sheaves with mating grooves. All parts of the belt work *together* to increase drive capacity—deliver more horsepower per inch of drive width than ever before possible with conventional multiple belt drives. Only Poly-V* offers these and other exclusive advantages:

- **Simplicity**—just *two* belt cross sections meet heavy duty requirement—up to 1700 HP
- **Reliability**—less maintenance, less take-ups, less wear on belts and sheaves
- **No Matching**—not an assembly of V-belts, single unit belt eliminates length matching
- **Better Performance**—lower stretch, maintains groove shape, complete contact-pressure, constant pitch and speed ratios . . . runs smoother, cooler, longer life

WHEN YOU CHANGE DRIVES . . . CONVERT TO POLY-V *AND BE SURE!*

*Patented

"More Use Per Dollar"

Poly-V Belt outlasts

V-Belts 4 to 1

Ask your R/M Distributor

About R/M Poly-V Drive

or write for Bulletin M141

RM154

RAYBESTOS-MANHATTAN, INC.

MANHATTAN RUBBER DIVISION • PASSAIC, N. J.

ENGINEERED RUBBER PRODUCTS

How American Industry Points The Way To Sustained Prosperity in 1961

Something new and very constructive is happening in American industry. It promises to add a major element of strength to business not only in 1961 but right along over the years ahead.

What is happening is essentially this. **American industry is planning to continue to invest heavily in new and better producing facilities in spite of the fact that it has an excess of capacity to produce its present range of products. And, by doing so, business is helping to shape a stronger American economy.** For the continuation of a high level of capital investment by business is one of the most important keys to sustained prosperity.

News of this major new development in American industry is provided by the results of the McGraw-Hill Fall Survey of Business Investment Plans for 1961 and 1962, presented in detail at the right. The McGraw-Hill investment surveys, now in their 13th year, cover a broad cross-section of American industry.

How American industry is aiming to go ahead with a big investment program in spite of its present burden of excess producing capacity is highlighted by the plans of manufacturing companies. The McGraw-Hill fall survey finds that, on the average, these companies are using slightly less than 80 per cent of their producing capacity. They would like to be using well over 90 per cent.

Dramatic New Departure

If historic investment patterns were being followed, our manufacturing companies, with only about 80 per cent of their capacity being employed, would be cutting back new investment programs drastically, and cutting down prosperity in the process. **But — and here is the dramatic new fact — they plan almost no cut-backs in their investment programs.** They plan to invest almost as much (within 3%) in 1961 as they are investing this year. And this year they are investing 19 per cent more than they did in 1959.

There are two major reasons why American industry is unwilling to let its excess producing capacity stall its investment in new facilities until the capacity is more fully used. One is that a lot of this capacity is obsolete and costly to operate. Increasingly rugged competition is creating a strong inducement to replace this antique capacity with modern, more efficient equipment which is widely available.

PLANS FOR CAPITAL SPENDING
(Billions of Dollars)

INDUSTRY	1959 Actual*	1960 Estimated*	1961 Planned	1960-1961 % Change	1962 Planned
Iron and Steel	$1.04	$1.52	$1.37	—10%	$1.18
Nonferrous Metals	.31	.34	.34	0	.32
Machinery	.91	1.15	1.11	— 3	1.11
Electrical Machinery	.52	.62	.68	+10	.63
Autos, Trucks & Parts	.64	.89	.95	+ 7	1.02
Transportation Equipment (Aircraft, Ships, R.R. Eq'pt.)	.39	.41	.37	—10	.35
Other Metalworking	.88	.97	.85	—12	.87
Chemicals	1.24	1.61	1.64	+ 2	1.59
Paper and Pulp	.63	.75	.69	— 8	.53
Rubber	.19	.24	.23	— 4	.20
Stone, Clay and Glass	.53	.63	.56	—11	.55
Petroleum & Coal Products	2.49	2.45	2.52	+ 3	2.50
Food and Beverages	.82	.94	.99	+ 5	.97
Textiles	.41	.53	.42	—21	.40
Miscellaneous Manufacturing	1.07	1.28	1.21	— 5	1.13
ALL MANUFACTURING	12.07	14.33	13.93	— 3	13.35
Mining	.99	.99	.90	— 9	.89
Railroads	.92	1.04	.79	—24	.83
Other Transportation & Communications	4.69	5.20	4.61	—11	4.18
Electric And Gas Utilities	5.67	5.89	6.14	+ 4	6.01
Commercial (1)	8.21	8.61	8.70	+ 1	8.54
ALL BUSINESS	32.55	36.06	35.07	— 3	33.80

*U.S. Department of Commerce, Securities and Exchange Commission, McGraw-Hill Department of Economics.

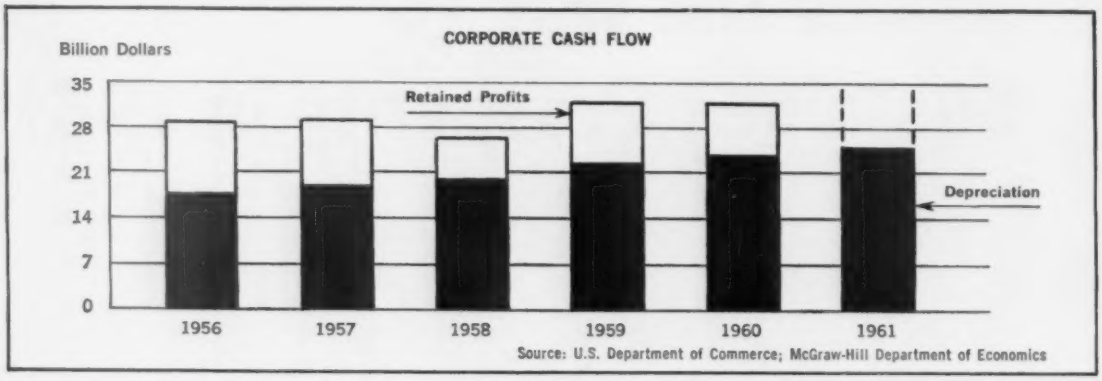
(1) Figure based on large chain, mail order and department stores, insurance companies, banks and other commercial businesses.

"R And D" Paves The Way

The steel industry provides a good case in point. Despite an operating rate of little more than 50 per cent during the last six months, steel companies plan a total investment of nearly $1.4 billion in 1961. And though this is 10 per cent below their capital expenditures in 1960, it will still be the third highest year on record.

incentive and wherewithal to continue a vigorous program of new investment. In addition, if price inflation were to begin surging again, it would eat away the power of depreciation reserves to purchase new plant and equipment.

The allowances now permitted American industrial firms for the depreciation of their producing facilities are lower than those made in any of the industrial



Also, new investment is required to tool up for the manufacture of the new products being spawned by the continuing boom in industrial research and development. This year, we are spending about $13 billion (that's *billion*) for all research and development, about $9.6 billion of it through industry.* And out of it is coming the "know-how" for a veritable flood of new products, processes and equipment, most all of these calling for new producing equipment. Next year, American manufacturers plan to get 12 per cent of their sales in products that did not even exist four years ago.

Key Role Of Depreciation Reserves

A major reason why American industry can combine the desire to carry out big new investment programs with the necessary financial capacity to do it is to be found in the growth of its reserves for depreciation. This year, (1960), business has been in a squeeze between costs and the prices it could get for its products. This cost-price squeeze has reduced profits sharply. The total of profits for the year will be down about 5 per cent.

Allowances for the depreciation of existing plant and equipment, however, have continued to rise. The result is that the so-called cash flow of corporations (their retained profits plus their allowances for depreciation) is the same this year as last. And this cash flow, shown in the chart above, makes a decisive contribution to financing new investment.

Inflation Would Be Deadly

If the sort of profit squeeze that has prevailed this year were to become chronic, it would blight both the countries with which we are in increasingly tough competition. More adequate allowances would speed up the job of modernizing American industry. An earlier McGraw-Hill survey indicated that it would cost only slightly less than $100 billion to bring our nation's plant and equipment up to date.

But at this juncture, American industry's eagerness and capacity to maintain a high level of investment capital is adding a great new element of constructive strength to the nation's economy.

---

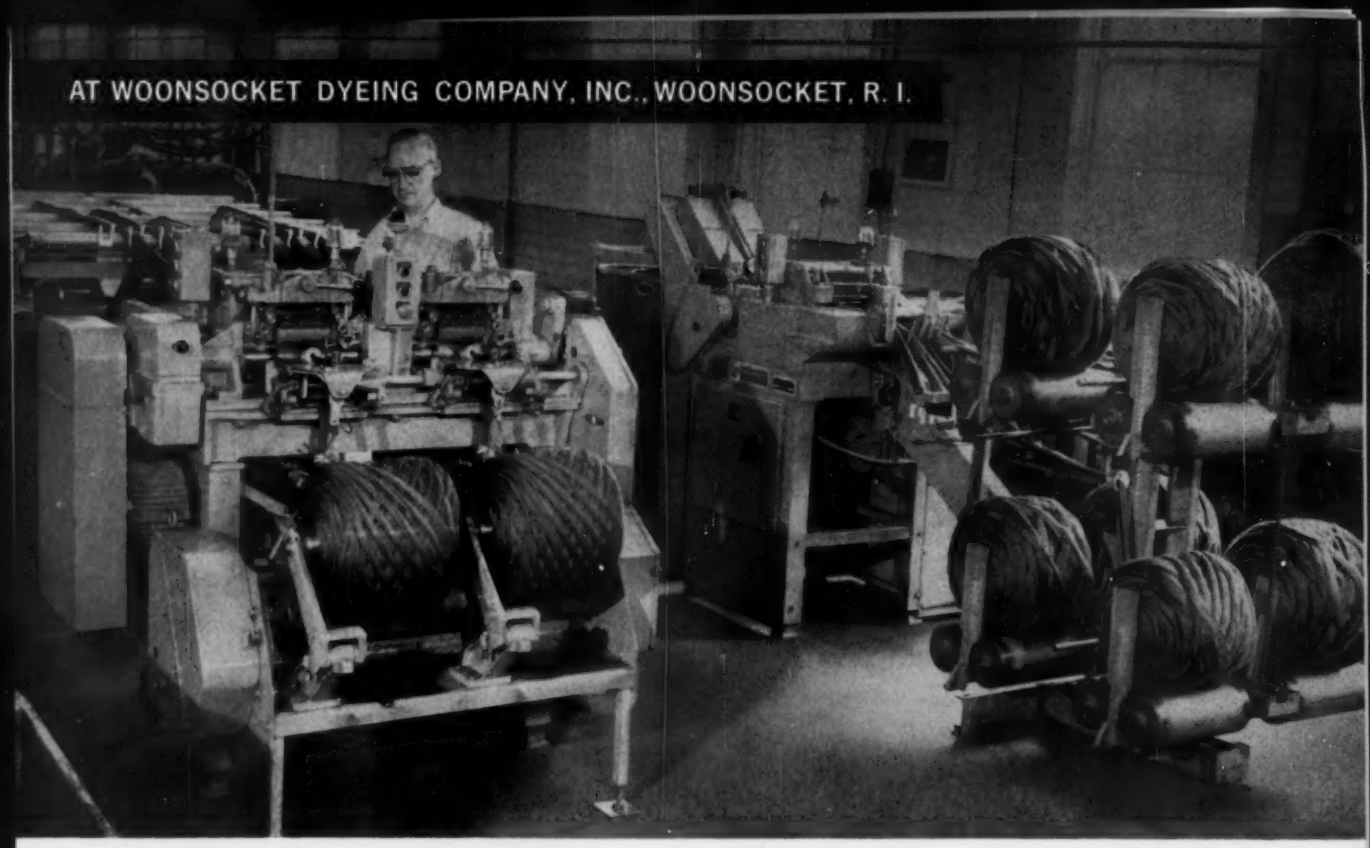
*The significance of this boom for American industry is analyzed in a new McGraw-Hill book, "The Research Revolution" by Leonard Silk, Economics Editor of BUSINESS WEEK. Together with other new business investment trends the "R & D" boom also constitutes a key part of another new McGraw-Hill book, "New Forces in American Business" by Dexter M. Keezer and associates — the November selection of the Business Book Club.

This message was prepared by my staff associates as part of our company-wide effort to report on major new developments in American business and industry. Permission is freely extended to newspapers, groups or individuals to quote or reprint all or part of the text.

Donald C. McGraw

PRESIDENT

McGRAW-HILL PUBLISHING COMPANY



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Jacques E. Dubois, Vice President and General Manager, reports that the greatest return on their investment has been realized in the Blending and Finishing Department. Here they replaced one six-head and one five-head gill boxes, as well as an odd assortment of various size gill boxes and three M-2350 Series Pin Drafters, with two heavy-duty single head and two dual head Pin Drafters. Savings were realized through reduced labor and maintenance, yet production and quality increased substantially.

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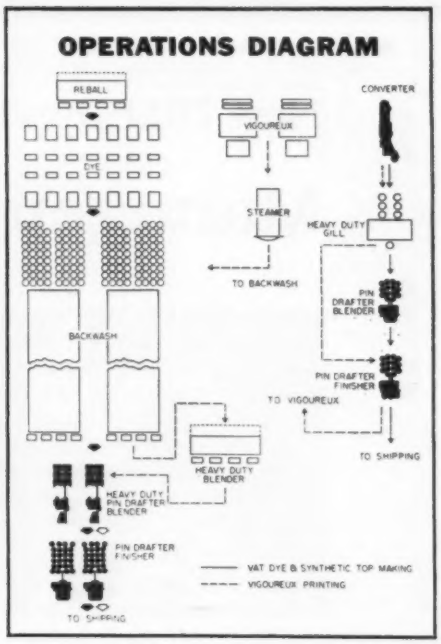

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LOOKING AHEAD. Management has run a computer simulation of a proposed inventory plan. Company executives (above) now examine charted results showing how the plan might work, what problems might arise, where improvement might be sought. Print-out sheet (below) from an IBM computer contains facts needed to judge long-range results of a given inventory control plan. Inventory Management Simulation takes much of the guesswork out of planning.

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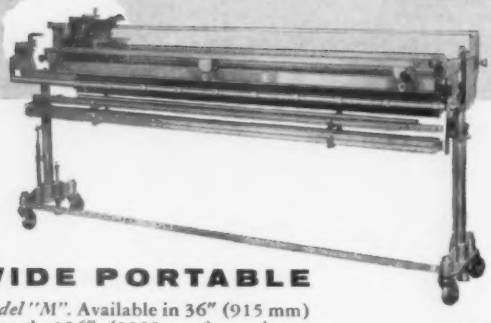


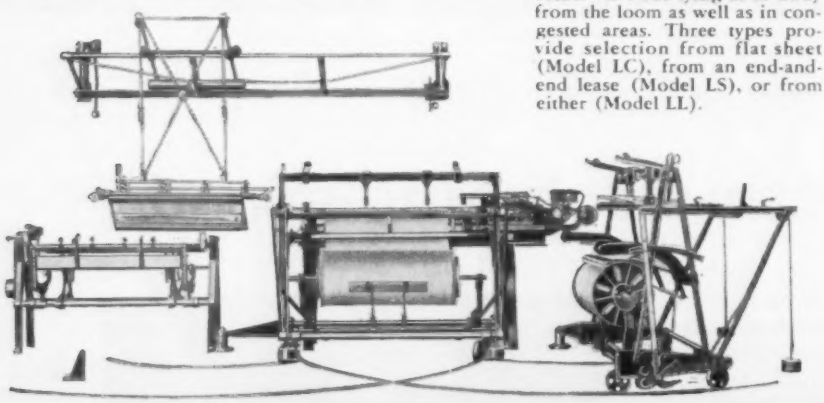
ALL MODELS OPERATE UP TO 325 KNOTS PER MINUTE CONTROLLED BY VARIABLE SPEED MOTOR DRIVE

WIDE PORTABLE

Model "M". Available in 36" (915 mm) through 126" (3200 mm) maximum warp width capacity. Multiple frames permit advance loading. Three types provide different methods of selection.

15" (380 MM) PORTABLE

Model "L". For tying at or away from the loom as well as in congested areas. Three types provide selection from flat sheet (Model LC), from an end-and-end lease (Model LS), or from either (Model LL).



STATIONARY

Model "EL". Designed for use in mills that concentrate on simple weaves. Available in 46"(1170 mm) through 116" (2950 mm) maximum warp width capacity. Tying ahead saves substantial down time at the loom. Selects from flat sheet only. For cotton and spun yarns.

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For more information on any of these items, circle appropriate number on the Reader-Service Card, next to the back cover.

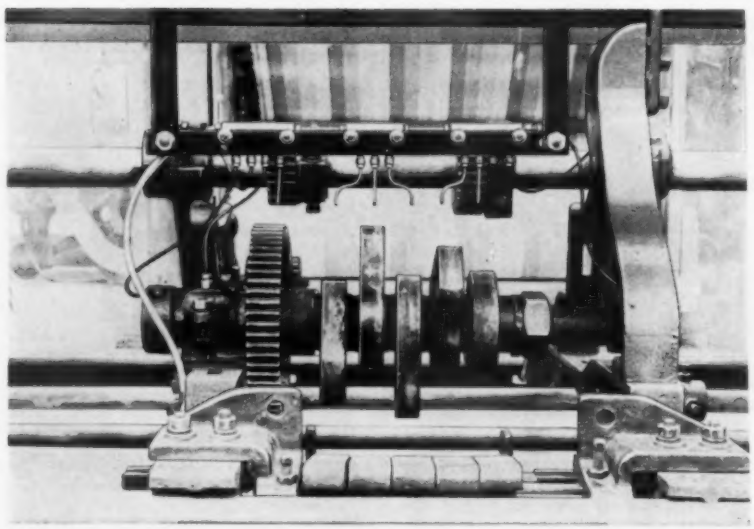
Now—Drawing At 800 FPM

A two-delivery drawing frame, designed by Whitin Machine Works, is capable of speeds up to 800 feet per minute. This unit, Even-Draft Model M7, uses 20x42-in. delivery cans. It's designed to run 10 ends up from a power creel.

Stops are quick, but soft through the use of a deceleration unit. The frame uses a 5-hp. motor with variable-pitch sheaves. Whitin's four-over-five roll design is used in the drafting zone. The weighting system is over-arm suspension, with precalibrated springs. Weighting is easily applied or quickly released on each delivery.

For stability, at high-speed operation, the tube gears are supported by ball bearings, and drivers by a V-belt drive. Unit comes with Pneumafil cleaning system. **(Circle E-1 on Reader-Service Card)**

Reducing Loom Stops with Central Lubrication



Central lubrication kit, developed by Bijur Lubricating Corp., features easy installation. The system eliminates two problems of hand oiling: (1) stopping looms for oiling, and (2) staining of fabrics.

The kit includes a distribution system with meter units that control the amount of oil feed to cams and gears. One steel bar holds this distribution unit. And the lubricator, which holds two pints of oil, mounts near the loom motor. It's operated without stopping the loom.

The kit can serve 12 points on the loom. But if less than six cams are being used, the extra fittings are covered with caps. **(Circle E-2 on Reader-Service Card)**

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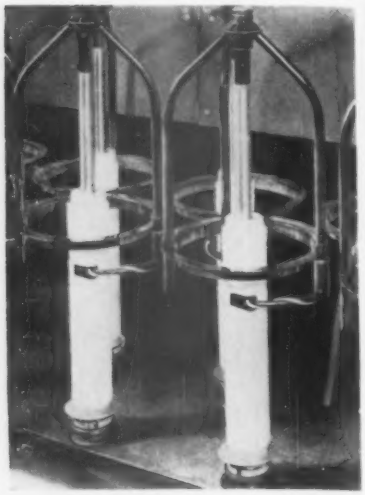
For more information on any of these items, circle appropriate number on the Reader-Service Card, next to the back cover.



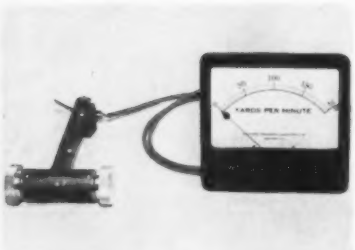
High-Speed Flyers for Roving Frame Change-Overs

Flyer speeds can be increased by 15% with the high-speed flyer, developed by Roberts Co. With the legs joined by a special rim design (eliminating deflection due to centrifugal force), the flyer operates at speeds up to 1,200 rpm. Also each unit is dynamically balanced at 1,000 rpm. to give consistent results between spindles.

The roving passes through an enclosed tubular leg, thus preventing fluffing caused by air turbulence. This tubular leg is self-cleaning, which eliminates a maintenance problem of conventional flyers. Break-in is minimized.

Threading the roving (with a special hook) can be done in either direction. Doffing is done in the conventional manner.

The flyer features a counterbalanced presser. Result—more even roving with 5 to 20% more roving on each bobbin. **(Circle E-3 on Reader-Service Card)**



Controlling Warp Stretch

Warp stretch meter designed by Strandberg Engineering Laboratories, Inc., makes recording and control of warp stretch at the slasher automatic. It monitors and regulates the feed rolls (at the size box) and the delivery rolls to obtain a preset degree of warp stretch. The Pace Monitor uses friction-surface rollers, working in direct contact with the warp sheet. This eliminates slippage or changes in roll size or gear ratios. Stretch can be controlled under all speed and tension conditions. Unit controls slasher drive. **(Circle E-4 on Reader-Service Card)**

E-5—Yardage counter, designed for the carpet industry, measures and regulates the amount of yarn put on the bobbin at the twister. Settings are in 50-yd. increments over the effective range of 2,100 yards. Unit stops spindle automatically with accuracy of ±10 yards. It works on the universal type twister, one for each spindle. Unit handles woolen, man-made-fiber, and blend yarns. Atkinson, Haserick & Co., Inc.

E-6—Spindle adapter converts woolen and worsted spinning frames to paper tubes. A paper bobbin holds up to 20% more yarn. But a full paper bobbin weighs less than a full wooden bobbin. Results—longer runs, less down time, and fewer knots. These units will not splinter or wear unevenly. Replacement costs are one half that of conventional bobbins. Unit has a built-in brake. Joel S. Perkins & Son.

Harness Eye Stops Scoring

Nylon harness eye, developed by Steel Heddle Mfg. Co., keeps the hook within the eye to eliminate harness scoring. Because the eye is nylon, metal-to-metal contact is eliminated, reducing wear.

Eye makes the harness last longer because frames don't break from scoring. Also wood splintering is eliminated, preventing warp damage in the loom.

The unit comes in two sizes. One works on frames, using $\frac{7}{16}$-in. lumber. These eyes use No. 8 and $\frac{3}{16}$-in. hooks respectively. **(Circle E-7 on Reader-Service Card)**

. . . Turn to page 134

RS

EMIL ADOLFF

REUTLINGEN/WUERTTEMBERG–GERMANY

We would ask you to write, if you are interested in further technical details.

U.S.A. CENTRAL ORGANIZATION
Textube Corporation, 695 Summer Str., Stamford, Conn.

SUB-AGENTS FOR THE SOUTH
Watson & Desmond, 220 West Fourth Street, P. O. Box 1954, Charlotte, N. C.

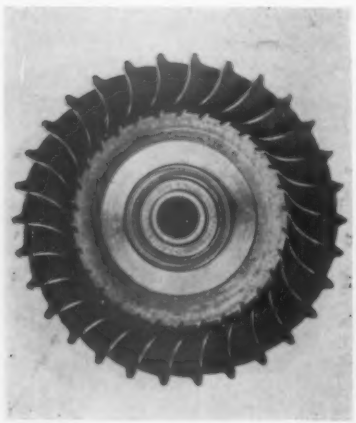
SUB-AGENTS FOR CANADA:
Crowther Limited, 212-214 Victoria Ave., Westmount, Montreal P.Q.

Equipment and Supply News

. . . *Begins on page 131*

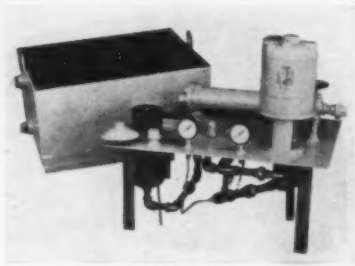
For more information on any of these items, circle appropriate number on the Reader-Service Card, next to the back cover.

E-8—Tubing for textile bobbins comes in I.D. sizes of ⅛ to 48 inches. It's made from paper-base phenolic resins. Axial tensile strength is 12,025 psi.; fiber tensile strength is 33,750 psi. Tubing comes in wall thicknesses from $\frac{1}{32}$ to 1 inch. Westinghouse Electric Corp.



E-9—Knitting wheel, type LT, features a sealed, life-time lubricated, ball-bearing assembly. The unit comes in any size to fit the Crane Knitting machines. Four types are available: landing, finishing, stitch, and clearing wheels. The permanent oil seal permits higher speeds, eliminates oil stains and lowers maintenance cost. Also there is less lint and yarn accumulation under the wheel. Crane Mfg. Co.

E-10—Textile motor, designed for protection against lint, is a fan-cooled totally enclosed unit. It's available in 1 to 50 horsepower with speeds from 720 to 1,800 rpm. This motor, Model JG, has a ribbed surface for faster heat dissipation. U. S. Electrical Motors, Inc.



E-11—Lubricating system, for calender, controls oil temperature and viscosity. Results—reduction in bearing friction and increased bearing life. Unit uses a replaceable cellulose filter. This 7-lb. filter handles 75 psi. at up to 275 F., and filters particles of 2 microns. System handles all types of oil from soluble to 2,400 SSU at 1½ to 70 gallons per minute. Purolator Products, Inc.

E-12—Diaphragm pump, hand-operated, is a self-priming unit. It uses a 2-in. suction and discharge hose, and handles any pumpable liquid or slurry mixtures. Capacity is 1,800 gallons per hour. Suction lift goes to 25 feet. Each stroke of the 32-in. galvanized steel handle pumps one gallon. Therefore, the operator can easily handle 30 gallons per minute without tiring. Fittings are 2-in. NPT. Edson Corp.

E-13—Pick counter, called Micrometer Magnifier, comes with measuring graticule. The viewing field is one square inch. Unit has 5X magnification and folds to fit the pocket easily. The scale is an opaque white, reading accuracy to 0.002 inch. Ealing Corp.

E-14—Adhesive, acrylic-latex type, binds polyurethane foam to fabric. When cured (3 to 10 minutes at 280 to 300 F.), the adhesive gives good washfastness and solvent resistance. Only small amounts of adhesive are required. Result—a flexible hand. Alco Oil & Chemical Corp.

E-15—Moisture control instrument automatically regulates the heat needed to dry cotton. Unit, called Fiber-Rite, registers the moisture content in cotton. This takes the guesswork out of cotton drying. Result—better, more uniform grades. Murray Co. of Texas, Inc.

. . . *Turn to page 136*

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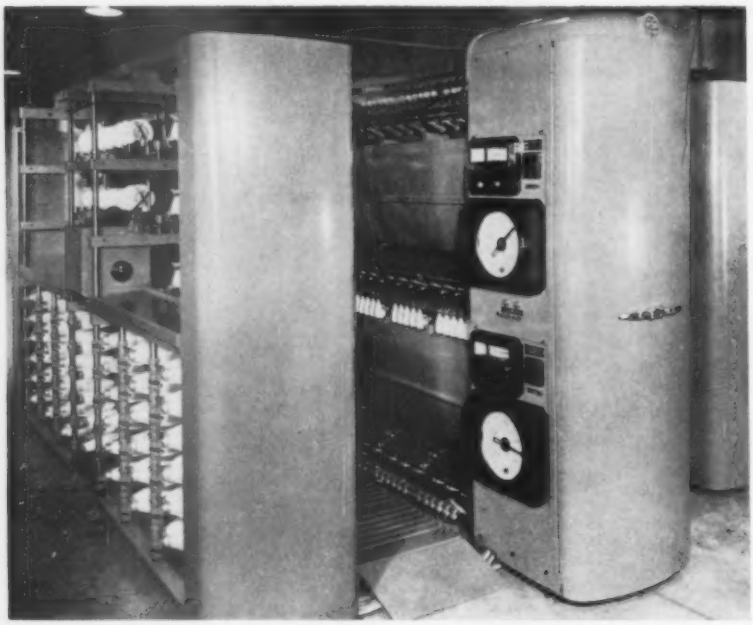
CIRCLE 135 ON READER SERVICE CARD

Equipment and Supply News—Knitting Arts Show

For more information on any of these items, circle appropriate number on the Reader-Service Card, next to the back cover.



It's New for Textured Yarns

Thermoplastic-type yarns are continuously processed into stabilized textured yarns in this Type FTF (false twist-fixed) machine, built by Ateliers Roannais de Constructions Textiles. Under precise mechanical and thermal control the unit produces high-bulk, low-torque textured yarns with a wide range of characteristics suitable for hosiery, knitting, and weaving. Uniform dye level is assured.

The frame displayed at the Atlantic City show was a 72-spindle unit. A standard production frame has 216 spindles, is 32 feet and 2 inches long, 7½ feet wide, and 10 feet wide with auxiliary creels. Yarn delivery from creel to frame is through a self-threading platform. Take-up of the finished yarn is over the work aisle. Spindles are ball-bearing mounted and run at 72,000 rpm. They have identical weight loading for uniform pressure on the tangential drive belt.

Process is a two-stage operation. Stage 1 produces a false-twist type of yarn. Stage 2 modifies this characteristic by controlling linear speed of the yarn. Temperature controls permit work in two heat ranges: 176 to 302 F. and 302 to 482 F., with accuracy of ±2 F. in each heat zone. Speed is constant to each heat zone and to the take-up package. In the second heat, overfeed can range well over 30%. Whitin Machine Works. **(Circle E-16 on Reader-Service Card)**

Jacquards for Circular Knit

This multi-purpose circular knitter, Model TJI-12, has a stationary cylinder and dial with revolving cam boxes. The unit, designed by Wildman Jacquard Co., has 12 feeds, each independently controlled. A four-color yarn changer comes with each feed.

The card control makes automatic changes from separating course to French Welt, 1x1, 2x1, 2x2 cuff with jersey, welt, or jacquard design. Cylinder and dial diameter is 30 inches. Unit is available with 5 to 14¼ needles per inch.

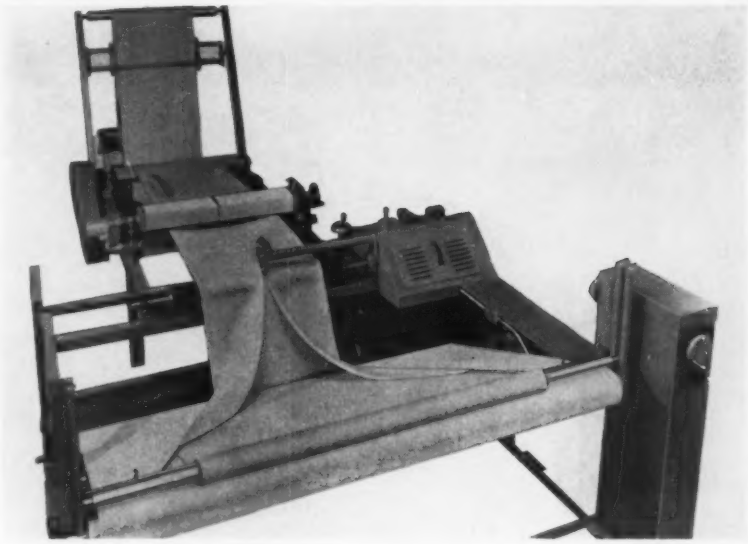
Automatic lubrication protects working parts. Unit features a two-speed motor with jog control. Fabric take-up keeps tension on the fabric at all times. Stop motions are available for needle, yarn, break, and knot protection. Dogless head keeps dial in line with cylinder allowing racking of dial to right or left. **(Circle E-17 on Reader-Service Card)**

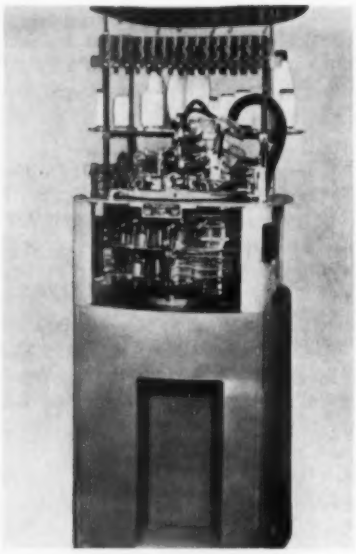
Here's **Installment 1** of TEXTILE WORLD'S report on the Knitting Arts Show in April. All items reported are new since the 1959 knitting show. Installment 2 will appear in July.

Now—Non-Stop Finishing

The tensionless open-width finisher, developed by Tubular Textile Machinery Corp., frames, steams, and slits the goods in one continuous operation. A spreader conveyor supports and carries the fabric through the steam. Therefore, no calender is needed and edge creases are practically eliminated.

Slitting is by a center-slit type unit. The goods are spread on a conveyor and rolled open width. The spreader is adjustable and handles up to 80-in. flat fabric. **(Circle E-18 on Reader-Service Card)**





It's Four Feeds For Seamless

This seamless hosiery machine makes up to 8-doz. pair of hosiery in eight hours. Textile Machine Works has combined its knowledge of 4-feed half-hose and 2-feed seamless machine into this high production run-down unit.

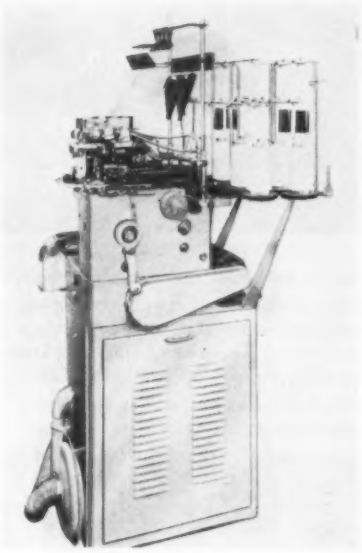
It's fully automatic with end trimming, multifeed tucking, floated lace, and vacuum takedown. The unit has stripping capability.

Cylinder diameter is 3¾ inches with 400 needles. Unit doesn't have reciprocating motion. **(Circle E-19 on Reader-Service Card)**

E-20—Pattern warp knitter, Model LPW, comes with 32 feeds, a 26-in. cylinder, and is an 18-cut unit. It has 3-position pattern wheels and 4-finger stripping boxes. The warp mechanism introduces a warp yarn to one or all needles from a single yarn source. Each yarn has an individual stop motion. Designs are unlimited, because wale and course patterns are introduced independently. Scott & Williams, Inc.

E-21—Electronic labeler handles up to 800 dozen garments per day. Operator simply places the garment to the sealing die. Labels are placed and sealed automatically. Unit uses 110 volts and 40 pounds of air. It has a built-in pressure regulator. Singer Sewing Machine Co.

E-22—Inventory control, for finished goods or retail operations, is simplified by this punch-marking system. Tags are printed and punched on Model 75 "Punch Marker." This unit prints 172 tags per minute, with a capacity of 29 punch-coded columns. Tags are 1⅛ x 2$\frac{5}{8}$ inches or 1⅛ x 2⅞ inches. After the tag is removed from the merchandise, then the KR Model A tag reader takes over. This unit works with IBM equipment to punch out IBM control cards for reorder or inventory control. A. Kimball Co.



Humidified Hosiery Machine

Four-feed seamless-hosiery machine, made by Singer-Fidelity, Inc., operates completely without reciprocation to make a tubular stocking with a reinforced foot. Stocking also has a tailored toe. Unit uses four feed throughout, even in the make-up.

Trimmer cuts yarn at changes. Humidification system, an optional feature, humidifies stocking to desired level regardless of over-all mill-humidity conditions. **(Circle E-23 on Reader-Service Card)**

. . . Turn the page

Time was when relocating mill machinery was a costly, major operation. But no more!

With a Unisorb mounting program you can position looms for greatest efficiency today and relocate as often as desired as conditions change — at lowest possible costs. You can save up to 80% on installation time . . . save on lag bolts and screws (not needed), save floors from damage (drilling is not required).

Unisorb reduces transmitted vibration and noise up to 85% — also muffles induced external vibration.

Unisorb vibration-protected looms can be run at maximum speeds, help you realize full production potential.

Unisorb vibration and noise-protected workers do a better job, are less subject to fatigue.

Unisorb keeps machines on the level — wear and tear on moving parts is reduced. One textile mill reports, "Unisorb keeps the rolls of the machine in better alignment. The spinning frame also runs better."

Available in many densities and thicknesses for textile machine mounting. Look for the distinctive red center. For data on loading ranges and specific applications, ask your Unisorb Distributor or write direct.

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Equipment & Supply News
Knitting Arts Show

. . . *Begins on page 136*

For more information on any of these items, circle appropriate number on the Reader-Service Card, next to the back cover.

E-24—Tag printer operates at 165 impressions per minute. The operator sets copy by simply turning the indicator dial. Items are preset on the indicator dial to your request. Unit prints production and garment identification tags simultaneously. Dennison Mfg. Co.

E-25—Hand-operated machine produces a large variety of subjacquard-type patterns without the complexity of jacquard cards. Three types of needles are used in the front bed and a fourth type in the rear bed. Needles are made of inexpensive wire—but produce patterns that would otherwise require the usual high- and low-butt needles and additional jacks for each needle. Ainslie Knitting Machine Co.

E-26—Extractor gently removes water from 80-lb. (dry-weight) load of washed work to prepare it for ironing or drying. Corrosion-resistant, stainless-steel construction protects fabrics. Simple, safe push-button operation. American Laundry Machine Industries.

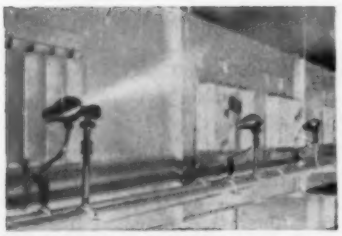
E-27—Circular jacquard machine, Morat Model Seuma, for knitting two-, three-, and four-color jacquard, cardigan-stitch, weave-knit, and other patterns and combinations of these patterns. Machine is built in Germany and is being distributed in the U. S. and Canada. It is 30 inches in diameter, 24 feed, and 12 to 18 cut. Main drive group assures smooth starting. Stonehill Knitting Machines Corp.

. . . *Turn to page 140*

Central Station Air Conditioning

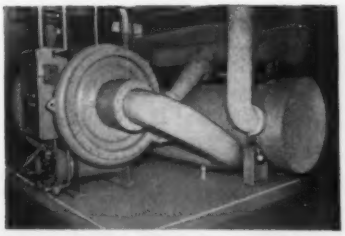
When you buy Parks-Cramer Central Station Air Conditioning you buy

- ✓ A system based on 56 years' experience in designing, manufacturing and installing air conditioning and humidification for textile mills.
- ✓ One or more central air washer units of superior performance and longevity. Here air is cooled or heated, humidified or dehumidified, washed and otherwise purified depending upon requirements. Refrigeration and electrostatic filters included when needed.
- ✓ Uniform air distribution to every department of the mill under close, reliable automatic control.



GraduVac humidifiers are used at duct outlets where conditions dictate. Fine spray and automatically varied evaporative output make GraduVac ideal.

Rotary tank screen filters water before it is pumped to spray nozzles. Performance of washer improved, maintenance greatly reduced.



Standard refrigerating equipment selected and engineered to suit each individual installation.

Certified Climate regulator for zone control of room conditions.

Rugged, simple, dependable.

Parks-Cramer Company

Certified Climate Systems since 1904

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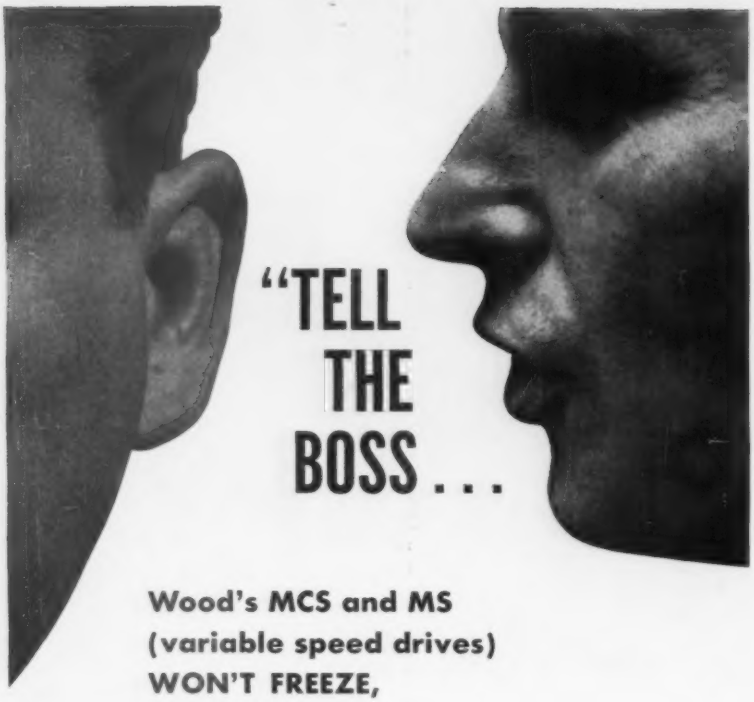
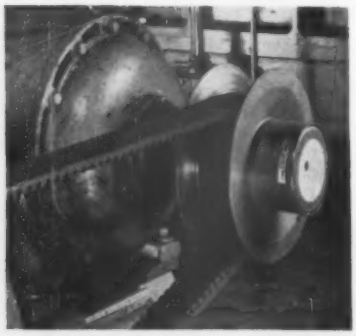
417



"TELL THE BOSS . . .

Wood's MCS and MS (variable speed drives) WON'T FREEZE, WON'T STICK"

And, remind him that Wood's MCS and MS motion control drives solve production and maintenance problems no other mechanical variable speed drives can handle. They won't freeze or stick because there are no keys to obstruct lubrication of bearing surfaces. Revolutionary resilient cam followers or pads, located outside the bearing surfaces, permit continuous rotational pumping action, assure even distribution of oil. And, you check lubrication only three or four times a year. Also, Wood's MCS drives hold constant driven speeds under varying torque loads.



Wood's motion control, variable speed drives are available in capacities from fractional to 25 hp. If you and the boss want more information about these remarkable drives, write for BULLETIN 25103.

Woods

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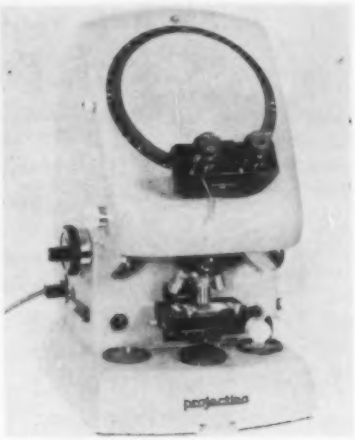
140 CIRCLE 140 ON READER SERVICE CARD

Equipment & Supply News

Knitting Arts Show

. . . Begins on page 136

E-28—Sewing machines come with higher speeds and new attachments. The 1311-1 flatlock unit operates at 4,200 rpm. It has automatic lubrication and a positive trimmer. Serge and seaming unit, Model 1422-CK-13-2, runs at 5,000 rpm. making a 401 stitch. The overfeed adjusts through a 4 to 1 ratio. The 238-277 zigzag machine has a blind stitching face attachment running at 3,800 rpm. Lockstitch bar tacker, Model 3334-220, has 10 quick-change cams. It also trims and cuts the thread automatically. Willcox & Gibbs Sewing Machine Co.



E-29—Photomicrography for textile work is simplified by using a Polaroid Camera. The Projection Model 4014 has a projector and a binocular eyepiece. A special unit adapts the camera to the projection screen. Therefore, finished photographs are available in a matter of seconds. Magnification range is 7X to 2000X. Unit has three built-in illumination systems. Hudson Automatic Machine & Tool Co.

E-30 — Washer handles 225-lb. loads of all fabrics, including silks and woolens. Removable partitions save time and labor unloading, and are removed during washing to give full drop of work in cylinder. Two speeds, 42x54 inches. American Laundry Machine Industries.

For more information on any of these items, circle appropriate number on the Reader-Service Card, next to the back cover.

E-31—Hosiery boarder sets and drys 48 stockings at once. Two 48-board packs are used. While one is in the drying cycle, the other is being unloaded and reloaded. Steam drying is used, with the temperature preset and controlled to ±2°. Paramount Textile Machinery Co.

E-32—Narrow-fabrics knitting machine with a head 11 in. wide to knit four tapes (each 1 4/5 in. wide) is being manufactured in France. Production on a 14-gage model is 76 yards per hour of plain stripe or 35 to 40 yards in two- or three-color stripe. Servo-Stop S.A.R.L.

E-33—Double-lock machine, Supramat-B, an automatic machine with simple control produces high-grade knitted outerwear and underwear and rib borders with slack course and separating row. An almost complete range of patterns 63 in. wide is possible: automatic racking over one and two needles, colored patterns, and automatic changes from 2/2 to 1/1. Stonehill Knitting Machines Corp.

E-34—Knitted patterns controlled by electromagnets are made on a single-system, fully automatic, flat knitting machine. Machine is called Electromat V. S. Clutch is by Warner Electric Brake & Clutch Co. (U. S. A.). Production is three yards per hour. Servo-Stop S.A.R.L.

. . . *Turn to page* 142

NEW!

Faultless
100 and 500
SERIES
Textile
Casters

Series 500
Rigid Plate
Caster

Snagged threads that bind doff box or truck casters needn't stop your textile production! Faultless has designed NEW *textile casters* with *wide,* easy-to-get-at *clearance* between caster wheel and horn. Low cost Faultless 100 and 500 Series Casters also feature corrugated steel construction for added strength, ball bearing assembly in hub to absorb side thrust, deep drawn thread guards, and wide choice of wheels to suit a variety of load and floor conditions.

Series 100
Swivel Plate Caster

Special sturdy King Pin; large diameter ball bearings roll in uninterrupted, lubricated raceway.

Ask Your Distributor

Your local Faultless Industrial Distributor has a wealth of information on caster applications, and he maintains a caster stock. Both he and the local Faultless Sales Engineer will be glad to work with you.

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static

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This electronic static eliminator is *unconditionally guaranteed* to end all static problems . . . safely, inexpensively . . . the most effective neutralizer available for use on cards, garnetts, warpers, slashers, finishing machines, and all other textile applications. The "*Midget*" assures static-free warps and slivers every time. Simco is America's largest manufacturer specializing in static neutralizers, anti-static cleaning devices and sprays, and meters for locating and measuring static.

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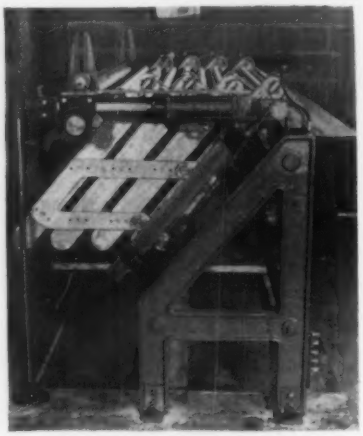
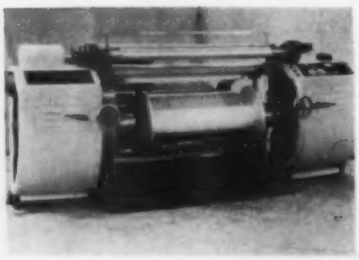
. . . *Begins on page 136*

E-35—Winder handles standard or texturized yarns at up to 1,000 yards per minute. Unit comes in 6-in. 144 spindles, 8-in. 112 spindles, 10-in. 96 spindles, or 12-in. 80 spindles. Gage ranges from 11 to 18½. This winder takes any type of standard cone or tube. Production is increased 50% due partly to the automatic bobbin exchanger. This magazine is filled at any time, and then the operator simply ties the yarn (with a yarn tier) when each bobbin runs out. Tension can be varied from $\frac{1}{16}$ gram to 50 pounds. Machine Corp.



E-36—Accumulator rolls, for use behind a high-speed warper, are used for backwinding at yarn breaks. The unit is hydraulically operated from the warper control panel. It holds up to 42 feet of yarn. The yarn passes between the sets of rolls. When operated, the top rolls move down and the bottom rolls up. Unit handles 42-in. warp sheets up to 1,200 ends. Cocker Machine & Foundry Co.

E-37—Knit goods dryer handles tubular or woven goods. Unit works as a preshrinking machine with 0 to 30% overfeed rolls. Standard widths are 48 and 72 inches. The unit evaporates 400 pounds of water per hour. Tubular Textile Machine Corp.



E-38—Tricot warper, Model SB-42, features hydraulic-operated pressure roll. This eliminates snubbers and makes a uniform density beam. Unit handles 42- or 55-in. beams with up to 32-in. beads. Warping speed is adjustable up to 750 gpm. Cocker Machine & Foundry Co.

E-39 — Seamless-hosiery machine with single feed and 400 needles is made in Italy. Patterns produced are micromesh, plain, diagonal mesh, fish net, etc. Production is 6-doz. pairs in 24 hours. Individual motor and drive unit—integrally built into the machine—gives three-speed control. Features—automatically inturned welt and garter band in various lace patterns. Seamless Knitting Machinery Corp.

E-40—Warp-yarn monitor comes with length defect counter. Unit has 10 different settings for sensitivity. Power supply is 110/220 v., 50 to 60 cycles. Monitor handles warp speeds up to 600 yards per minute. Modual construction makes for easy servicing. Fabronics Corp.

E-41—Socks for men, women, and children are produced on a machine developed in Italy. Machine makes jacquard design in three colors. An electrical device burns off threads to separate socks. Production is one sock every 4½ minutes. Gage is 14, diameter is 3¾ inches, and there are 168 needles. Elastic-yarn welt is in double feed, plain knit, and diapered knit. Seamless Knitting Machine Co.

. . . *Turn to page 144*

PUBLICO
61.4 TW

MANUFACTURING

WINDING MACHINERY

Allows to make direct from grey or dyed cakes or bobbins straight or pineapple edged packages for weaving and knitting.

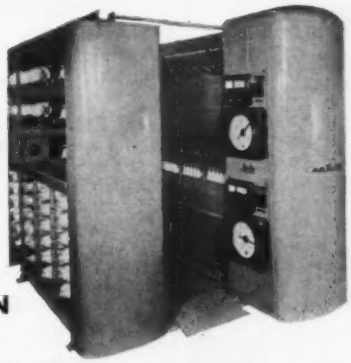
- **M TYPE** - for synthetic crimped and bulky yarns.
- **55 TYPE** for other textiles.
- **5 B AND 5 C TYPE** for coarse count yarns and cabled yarns for tyres.

TWISTING MACHINERY

- **AR. 4 TYPE** Assembler-Twister for crimped and twisted wool yarns special cabled yarns (sewing thread, fishing net yarns..)
- **ARC TYPE** spinning plant Ring Twister for extruded yarns.
- **ARU TYPE** double deck combined Ring-Twister which allows with single operation to make cabled yarns by twisting and plying simultaneously elementary yarns.

TEXTURIZED YARNS MACHINES

- **FT TYPE** and subsequent machines for synthetic yarns.
- **FTF TYPE** machine for bulky synthetic yarns according to a single process.



BEAMING PREPARATION MACHINERY

- **ER TYPE** Multicylinders Slasher for all textiles.
- **OR TYPE** high efficiency sectional warper with removable drums.
- **CR TYPE** magazine or truck creel.

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THE SURE TEST . . . SCOTT!

NEW PUSH-BUTTON CONTROL SIMPLIFIES PHYSICAL TESTING

THE SCOTT MODEL CRE Constant-Rate-of-Extension Tester offers you the ultra-high accuracy of inertialess electronic weighing . . . *plus* effortless automatic operation that takes the work and weight handling out of physical testing! At a touch, the simple finger-tip controls of the Model CRE provide a variety of crosshead speeds, complete crosshead control and a wide range of test capacities . . . enabling even the non-technical operator to obtain detailed test results faster, easier, and *at amazingly low cost!*

VERSATILITY is another time-and money-saving feature of the Scott CRE Tester. This simple yet super-sensitive tester is designed for use with Scott's more than 150 different clamps and holding fixtures to meet ASTM, ISO and Industry Test Methods and material requirements. Moreover, Model CRE can be set up quickly for tensile, tear, adhesion, burst, seam construction and many other physical tests . . . with ranges from the lowest up to 1000 lbs. or 500 kgs.

FOR PRODUCT DEVELOPMENT, QUALITY CONTROL, and countless other tests that make the difference between profit and loss . . . you can be sure *your* product's qualities meet industry standards, when you make the sure test . . . Scott!

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Equipment & Supply News

Knitting Arts Show

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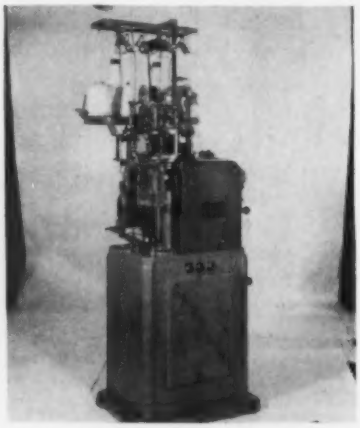
. . . *Begins on page 136*

E-42—String machine knits at 800 rpm. with up to four yarns. The unit produces 300 yards per hour. Width can be adjusted quickly and easily. Unit is complete with a ⅓-hp. motor, electric stop motion and a four-thread stand. Montrose Supply & Equipment Co.



E-43—Two-feed seamless machine uses a 3¾-in. cylinder with either 400 or 474 needles. Pattern range includes a gusset toe, Y-heel, looper line at the bottom, and is 25 step. Gordon thread trimmer is standard equipment. Carolina Knitting Machine Corp.

E-44—Tumbler dryer handles 50-lb. load of washed and extracted work in short, automatic cycle. Adjustable timer shuts off heated air at end of preset drying time, cools load, then signals operator to remove load. Single damper control keeps heated air at proper temperature for safe drying of various types of fabrics. Cabinet-type design saves space. American Laundry Machine Industries.

E-45—Pattern grading is automatic with the Multi-Grader. Unit handles seven grades at once. The top sheet is the master and all seven patterns are cut with one stroke. Each sheet is held by two clamps. Grades can be made in any increments. Willcox & Gibbs.

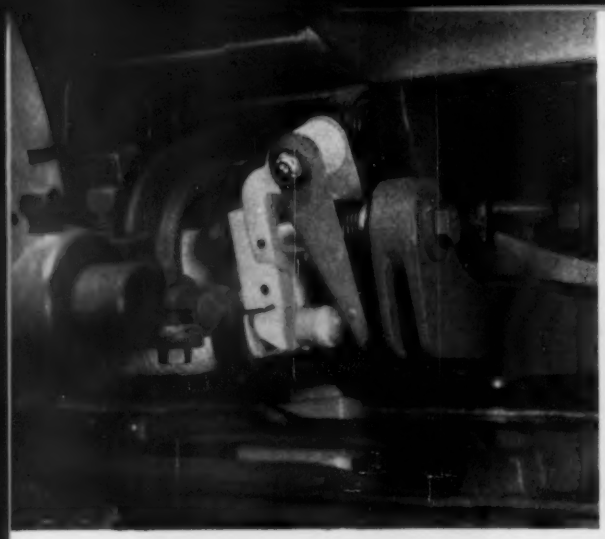
E-46—Hosiery box marker, Model 152A, prints up to 65 boxes per minute, requiring only one operator to fill feeding stack and remove printed boxes from conveyor-stacker. The unit has automatic counters, controls, and shutoff switches. Markem Machine Co.

E-47—Label applicator (Amscomatic 300) with mobile stand automatically places a pressure-sensitive ticket or label on a package traveling along a conveyorized packaging or delivery line. May be used independently or with packaging machinery, with or without an imprinting or marking machine. Label may be printed or marked at the time when it is affixed. Amsco Packaging Machinery, Inc.

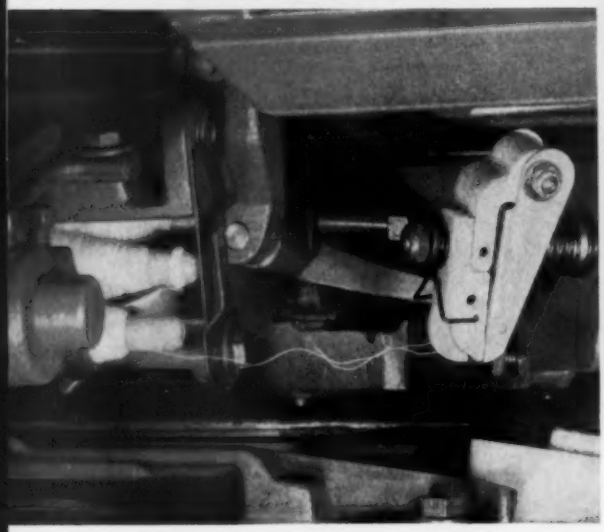
E-48—Sweater Stripe machine, Model BRW-3, is a fine-cut unit. It is available in 8 to 14 cut. The unit has 3-position pattern wheels and 16 feeds on a 30-in. cylinder. Striping boxes (on alternate feeds) have four-color fingers. Supreme Knitting Machine Co., Inc.

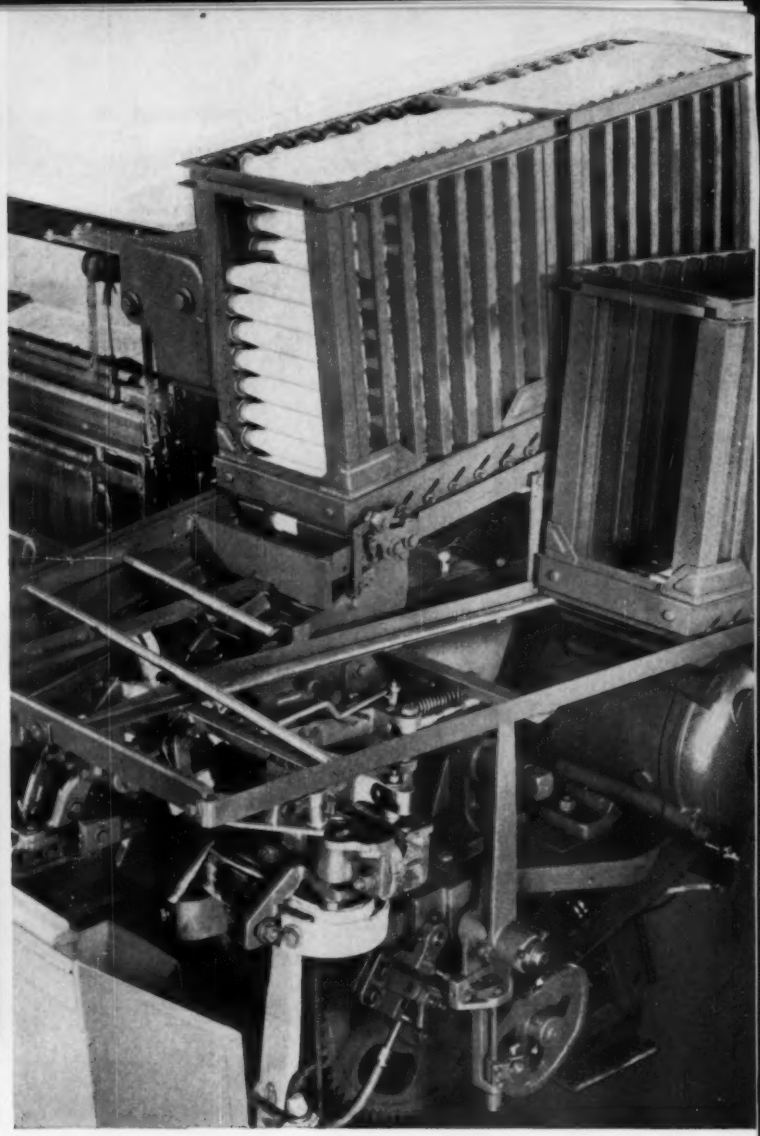
E-49—Circular knit yard-good machine, Model JSD-24, uses 24 jacquard feeds. Designs are unlimited —twill back, pique, blister stitch, raised welt, jersey, and full rib. Unit has a 30-in. cylinder with 14¼ needles per inch. Speed—12 to 12½ rpm., using a 3-hp., 2-speed motor. Jogging works through a slow speed clutch. Complete 12-v. stop motion systems are available. Wildman Jacquard Co.

. . . *Turn to page 146*



▲ EXTRACTOR HEAD ASSEMBLY MECHANICALLY
▼ EXTRACTS AND HOLDS THE TIP BUNCH.





New reasons why . . .

the Draper Automatic Filling Magazine offers greater mill savings

The Draper Automatic Filling Magazine with a new cam operated pivoting extractor and mechanical thread clearer eliminates the need for a vacuum system to clear the thread and the tip bunch of the incoming bobbin after transfer. This new construction reduces mill installation time and cost . . . simplifies maintenance . . . and improves cloth quality. *Consult your Draper representative for details on this and other advantages of the Draper Automatic Filling Magazine.*

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And Bond's quality pays off by eliminating wasteful stoppages and expensive loom downtime.

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617-23 Arch Street, Phila. 6, Pa.

Equipment & Supply News

Knitting Arts Show

For more information on any of these items, circle appropriate number on the Reader-Service Card, next to the back cover.

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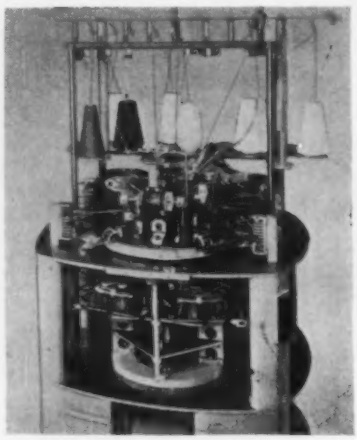
E-50—Extractor padder uses a three-roll construction. The front- and center-roll nip forms the extraction (fabric is fed from the bottom), and the center- and back-roll nip forms the pad section. Because the front and back rolls are in a higher plane than the center roll, this forms the pad pan. The pan is small, using less chemicals, but exposure to the fabric is greater. Extractor pressure (hydraulic control) goes to 350 pounds per linear inch; padder goes to 180 pounds per linear inch. Tubular Textile Machinery Corp.



E-51—Plain and crew sock machine features high production with styling versatility. The reading CK-B features machine parts accessible for reduced down time and easier maintenance. Cylinder diameter is 3¾ inches, running at 200 rpm. Average production is 15-doz. pairs in 8 hours. Units are available with 84, 112, or 168 needles. Drives use a ¾-hp. motor. Textile Machine Works.

E-52—Pinking machine also cuts samples. It is power-operated, and is quiet and easy to operate. The unit has a 2-in. knife lift, and comes in 14-, 20-, and 32-in. sizes. Cutter bar can be "inched" down by manipulating clutch lever. Chandler Machine Co.

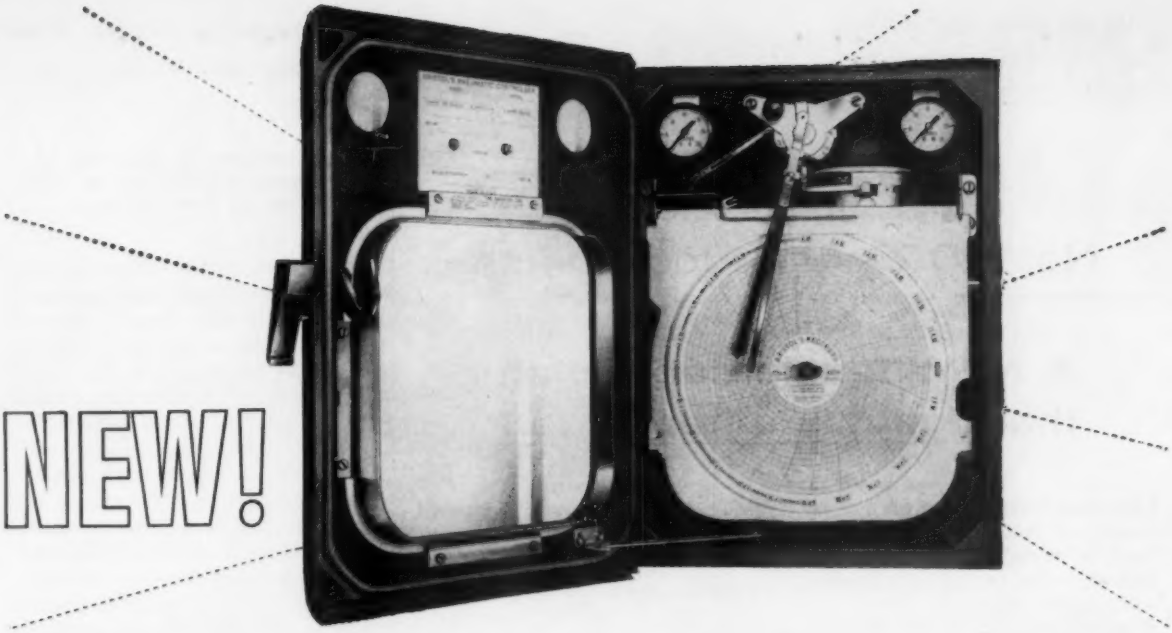
E-53—Spinning frame, Model SJ-4C, is a long-staple double-apron unit for wool, man-made-fibers, and blends. Draft control range goes from 1½ to 9 inches. Spindle speed is 9,000 rpm.; front-roll speed is 93 rpm. Gage is 4 inches. Saco-Lowell Shops.

E-54—Bandknife cloth cutter has a cutting height of 13 inches. The distance between the knife and arm is 47 inches. Unit uses a 1½-hp., 220 v., 2-speed motor. Cutting table is 88x59 inches. Cutter comes with a built-in knife sharpener. Montrose Supply & Equipment Co.

E-55—Traveler rings, Model 'M,' feature unique oil-distribution system with low oil consumption. Results—cleaner yarn, faster operation (without added wear), less yarn breakage (tension is automatically adjusted by traveler action and conical ring design), and longer life for traveler and ring. Key—oil is carried by capillary action (not wicks) through seams to bearing surfaces. Herr Mfg. Co.

E-56—Button sewer automatically positions flat buttons right side up, thus eliminating need for double-faced buttons. It also provides quick change of size or color, operates quickly up to 1,800 rpm., and responds to pedal control. Chandler Sales & Service Co.

. . . Turn to page 148



Bristol Series 532 A/D* pneumatic recording controller is outstandingly SIMPLE, RELIABLE, and STABLE

- **Simple modular design for ease of servicing**
- **High control stability for closer process control**
- **Designed for batch-type and continuous processes**
- **Proportional, proportional-plus-reset, and proportional-plus-derivative control models available**

Top control performance with maximum simplicity plus standard Bristol precision measuring elements—those are the key features of the Bristol Series 532 Recording Controller. The 532 uses the same renowned elements that have earned such a reputation for accuracy and dependability on other Bristol automatic controlling and recording instruments—perfected through wide experience and many years of development.

Self-contained modular design of the control unit speeds servicing. The whole modular unit, consisting of an aluminum casting with working parts made of stainless steel, Ni-Span C, and Neoprene diaphragms, can be removed by taking out only two screws and a link.

The die-cast aluminum instrument case (15¾ x 10¾ x 5¾ overall) presents a streamlined appearance and is completely dustproof and weatherproof.

Write for complete data on the new, versatile, economical 532 A/D. The Bristol Company, 103 Bristol Road, Waterbury 20, Conn., a Subsidiary of American Chain & Cable Company, Inc. 0.46

ACCO

CONTROL UNIT CHARACTERISTICS:

PROPORTIONAL BAND: 0-400% continuously adjustable, direct- or reverse-acting.

RESET: 0.1 to 100 repeats per minute.

DERIVATIVE: 0 to 10 minutes derivative time.

AIR PILOT: Non-bleed type.

PILOT CAPACITY: Over 3.0 scfm.

FREQUENCY RESPONSE: Essentially flat to 300 cycles per minute.

TEMPERATURE STABILITY: Less than 0.1% change in the output pressure for 90°F temperature change.

CHART: 8" diameter; wide variety available.

MATERIAL: Aluminum housing; 316 stainless steel internal parts; Ni-Span C feedback element.

RECORDING CONTROLLERS OFFERED FOR:

PRESSURE AND VACUUM: Ranges from full vacuum to 15,000 psi.

TEMPERATURE: Ranges from—100°F to +1000°F.

FLOW AND DIFFERENTIAL PRESSURE: With mercury-type manometer and dry-type differential unit.

LIQUID LEVEL: With bulb unit and mercury manometer and dry-type differential unit.

HUMIDITY: Zero to 100% relative humidity.

*Advanced Design

BRISTOL ...for improved production through measurement and control

AUTOMATIC CONTROLLING, RECORDING AND TELEMETERING INSTRUMENTS

TENNANT SYSTEM
Report On...

Urethane

No. 120 Textile Floor Finish

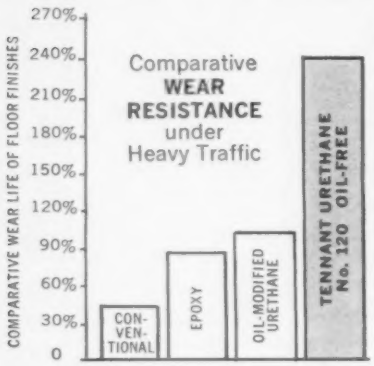
A NEW textile floor finish that outlasts others 2 to 1

Laboratory tests, now confirmed by results on extremely heavy traffic floors in many mills, show this . . . that new TENNANT Urethane *may well outlast your present textile floor finish by as much as 6 to 1.*

It has even outworn some other types of urethane finishes by 2.4 to 1.

This is a remarkable addition to the TENNANT System. Besides phenomenal durability, it is resistant to *all* usual mill oils and starches. Even acids fail to mar or discolor its tightly-bonded tough gloss finish.

Excellent for mills—Its features make it ideal for weave rooms, carding, spinning . . . wherever it is exposed to heavy, abrasive traffic, oils, grit, etc. Excellent for problem areas.



Extreme wear resistance—Even under brutal, punishing traffic in busy plants (see graph), no other type of finish comes close in durability. TENNANT'S hard, tough film seems almost "traffic proof."

Appearance—High gloss . . . colorless.

Drying tests—Ready for foot traffic in 3 hours, for truck traffic in 6. Three coats are usually recommended.

Economical to use—Because it rarely needs renewing, field tests indicate that TENNANT Urethane *costs far less in the long run* than common finishes, including most other types of urethane.

Easy to clean—It provides such a tough, dirt-resistant film, *even in oily areas,* that it normally has 4 to 8 times the usual finish life.

WRITE for more information to G. H. Tennant Co., 737E N. Lilac Drive, Minneapolis 22, Minn. *Let your Tennant man tell you about the remarkable cost-saving uses of this new Tennant System product . . .* on many types of floors.

The textile industry's most widely used Floor Maintenance System

TENNANT

Scientifically Planned and Adapted to Fit YOUR EXACT NEEDS

METHODS MACHINES MATERIALS

FLOOR MAINTENANCE SYSTEMS

Equipment & Supply News

Knitting Arts Show

. . . *Begins on page 136*

For more information on any of these items, circle appropriate number on the Reader-Service Card, next to the back cover.

E-57—Sewing aids include (1) positioner-trimmer that positions needle and trims thread automatically; (2) slide knife that trims up to 2 inches of thread, piping, etc. at the end of a garment; (3) flip stacker, electric or manual, that can be installed on present equipment; (4) a wide variety of specialized work aids for positioning pieces, performing work, and speeding work flow; (5) wood-and-steel horse with clamp for holding work firmly in place; (6) training unit that halves training time on sewing machines. American Safety Table Co., Inc.

E-58—Jersey-stitch machine, called string machine, knits tubing from ¼ to ¾ inches wide. Finer gage cylinders with 14 or 16 needles are usually supplied. But special heads for tubing from ⅞ to 1½ inches can be built. Specifications—single-feed head with wick-feed lubrication to bronze bearings; quick tight-and loose-stitch adjustments by thumb-screw control of cylinder. Ainslie Knitting Machine Co.

E-59—Warp-yarn inspector, Series 1000, is fully transistorized. It comes with a length selector control. The unit picks up fuzzy ends or small loop defects, which would otherwise be missed. Unit counts both major and minor length defects. Lindly & Co., Inc.

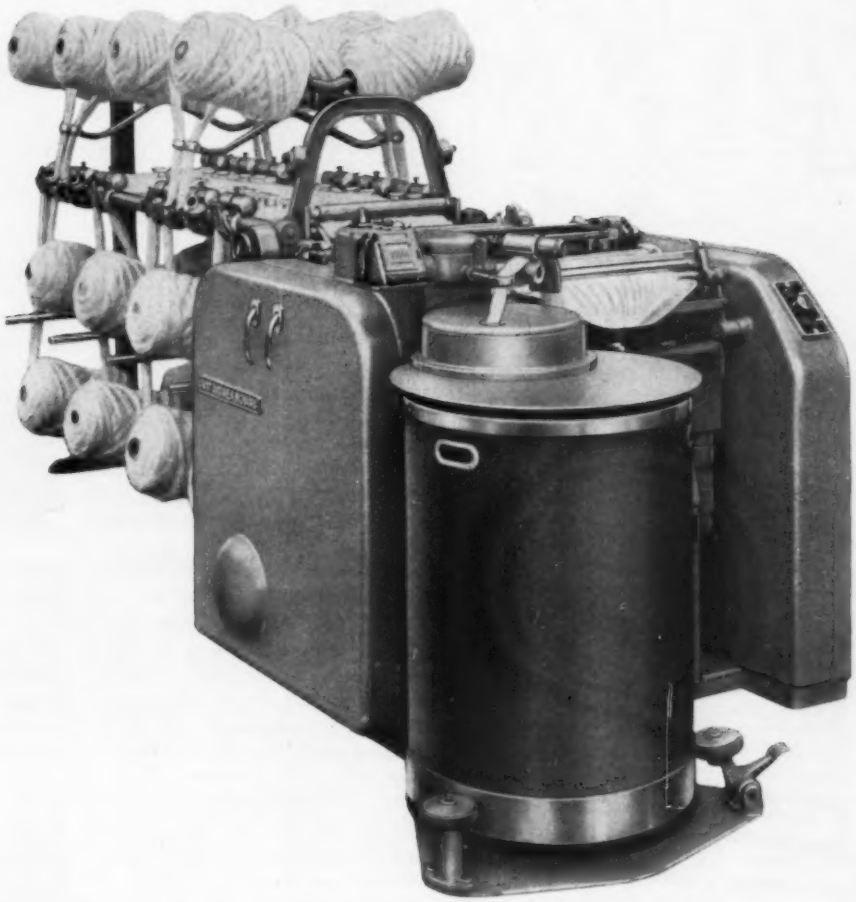
E-60 — Rubber-covering machine for high speed, quality, and production delivers more pounds per hour. Machine covers any rubber or spandex yarn number with any yarn number of cotton, nylon, rayon, silk, and acetate. Spindles run smoothly and continuously at speeds up to 16,000 rpm. Models are available with 40, 60, or 80 heads. Covered thread is delivered on tubes or hanks. Each spindle has an individual brake. All spindles have precision ball bearings on a fixed inner tube to keep core yarn from twisting. Atkinson, Haserick & Co., Inc.

. . . *Turn to page 150*

SANT'ANDREA NOVARA

Novara—Italy

Manufacturer and Exporter all over the world of textile machinery for combing, preparing, spinning and twisting of wool and artificial and synthetic fibres.



New Rectilinear Combing Machine Model PS for wool, synthetics and blends, working width 18 inches, high speed operation due to entirely new compensating motion, great productive capacity and great versatility.

The SANT'ANDREA NOVARA Model PS Comb incorporates many highly advanced patented devices in its construction which make it one of the most important developments in the field of the combing of fibres realized in recent times.

Working speed: with the burr-knife : 160 nips/1'
without the burr-knife : 175 nips/1'

Production: 100% increase over conventional rectilinear combs

More than 100 machines in use or on order in the United States alone.

Representatives for the United States and Canada:

ERNEST L. FRANKL ASSOCIATES INC.
515 MADISON AVENUE
NEW YORK 22, N. Y. — U. S. A.

Don't Lose that Machine!

SPECIFY IVES REPLACEMENT PARTS

Machines lost to downtime mean lost production for you. In addition to the expense of individual machine repair, "lost" machines can create a serious break in your production schedule. Avoid the crippling effects of lost production . . . be wise, specify Ives!

Ives parts are specially made to give you an extra measure of smooth, trouble-free production time. Every Ives part is hand crafted to the exact requirements of your machine. This superior workmanship means extra wear for you . . . at no extra cost!

Insure your plant's production schedule . . . specify "Ives Replacement Parts" for any of the following machines:

TOMPKINS
FIDELITY
SUPREME
SCOTT & WILLIAMS
BRINTON
WILDMAN
BANNER
BENTLEY
KIDDE
CRANE
REINER

IVES

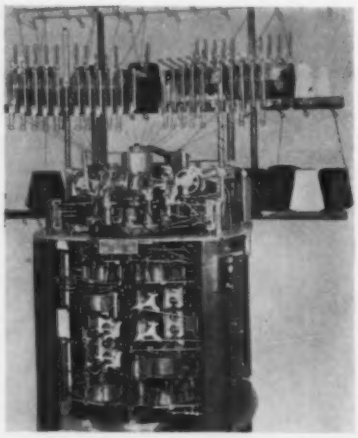
PHONE CHarter 9-0396-7

THE LOYAL T. IVES COMPANY, INC.
NEW BRUNSWICK, N. J.

Equipment and Supply News

Knitting Arts Show

. . . *Begins on page* 136



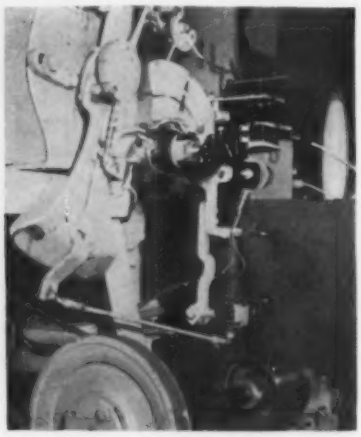
E-61—Multi-purpose pattern unit makes the CK-C sock machine a universal men's and boys' half-hose unit. It produces inlaid, overplaid or circular suturing. Speed is 160 rpm.; cylinder has a 3¾-in. diameter. Units come in 84, to 168 needles. Textile Machine Works.

E-62—Yarn trimmer, called Knitrol, eliminates hand trimming on cut-out patterns. Pattern yarn consumption is reduced. Machine performance is improved, because needle and jack breakage are reduced. Unit eliminates separator blades. Knitrol Div., Uster Corp.

E-63 — Double-jersey machines, built on the MFRC type frame, make pique fabrics at high volume. Unit has a 30-in. cylinder, 32 feeds, up to 18 cut, and operates at 16 rpm. The machine uses a 2-hp. motor, and its blowers eliminate lint. Scott & Williams, Inc.

E-64—Tensionless dryer comes with 55-in. drums of perforated stainless steel. Heated air is drawn through the fabric to the center of the drums. This holds the fabric to the drum and eliminates leaders. Unit comes in 32- to 72-in. width. Automatic control brings in fresh air when the chamber air is saturated. Drying capacity is 125 pounds of water per hour for each drum. Saco-Lowell Shops.

E-65—Automatic sock boarder, using a rotary drying chamber, combines two, 48 form units into one machine. Forms stop for boarding. Angle of forms is adjustable. Top-center exhaust improves operation. Automatic stripper removes socks. Paramount Textile Machinery Co.



E-66—Single-end yarn inspector detects a single broken filament. Unit, called Scan-A-Fil, works at twisting, winding, coning, draw twisting, or spinning. In operation it can be set up to stop, count, or record yarn defects. Sensitivity is adjustable. Fabronics Corp.

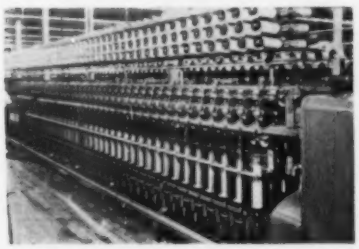
E-67—Dyeboarder combines dyeing, boarding, and finishing into one continuous operation. The unit has two circular board tracks that meet at the central dyeing chamber where 60 stockings are dyed at once. Each track has 90 boards divided into three, 30-board pockets. While 30 boards are being unloaded and reloaded, 30 are dyeing, and 30 are drying. Unit handles 450 dozen in 8 hours. Eugen Bellmann GmbH.

E-68—Circular knitting machine, with 54-in. dia. cylinder, makes a 12-ft.-wide carpet scrim. Unit is a spring-needle type that ties the loop to the outside mesh. Result—a stable fabric for carpet backing. Available 70-in. unit for 15-ft. fabric. Tompkins Bros. Co., Inc.

For more information on any of these items, circle appropriate number on the Reader-Service Card, next to the back cover.

E-69—Border knitting machine is a high-speed, flat, double-head model for making rib bandings in any desired width up to 4 inches, plain rib stitch, half cardigan, and full cardigan, racked and zigzag borders. Double head makes two strips of fabric simultaneously. Front auxiliary cams cast off tight stitches. Direct-motor drive controlled by relay prevents press-offs. Ainslie Knitting Machine Co.

E-70—Looper combines simplicity of construction with ease of operation with the sewing operation in full view. The point ring can be moved in either direction without taking the worm out of mesh. Looper comes with foot pedal. Scott & Williams, Inc.



E-71—Ring twister, Model No. 512, features a high-speed motion with a 12-in. traverse. The ring rail was engineered to give a smooth traverse at high speed—up to 5 rpm. of the builder-motion cam. This builder motion improves the package and quality. Leesona Corp.

. . . Turn to page 152

HOW TO DO THE DIFFICULT

Fairbanks 9215-S General Purpose Truck The necessary "tool" in shipping rooms, unsurpassed for handling small lot merchandise. Steel-framed construction combines strength of steel with resilience of wood.

Have happier workers and a happier boss both achieved by use of FAIRBANKS COST-CUTTER TRUCKS!

Just think of trucks as tools. Then you instantly recognize that the right trucks must make lighter work of materials handling. Your men with the right tool—the right truck—do more with less effort and with *greater safety*. You realize surprisingly large time and cost savings. Select your COST-CUTTER Truck now from Fairbanks complete line of Two Wheel and Platform Hand Trucks. Always specify Fairbanks Trucks for the rugged construction and smoother operation that brings added savings in long-lasting dependable service. Fairbanks Trucks are available from leading distributors in all the principal cities.

YOURS ON REQUEST: Big colorful catalog, #T-54, describes most complete line of trucks and applications. Write for your free copy of this valuable catalog today.

Fairbanks "Bantamweight" Platform Trucks
Sturdiest, lightest, easiest moving truck for all light duty applications. Unmatched value — costs less to buy, less to run.

Fairbanks Series "500" Lift Jack Trucks
One jack handle sufficient for several platforms. The perfect answer to minimum cost temporary storage.

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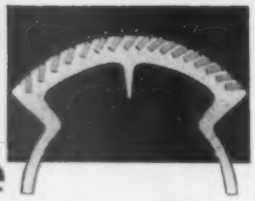
CIRCLE 151 ON READER SERVICE CARD



the Super J Comber's "RUNNING MATES!"

The Even-Draft High Speed Drawing Frame plays an outstanding part in the Whitin system for the unsurpassed processing of either carded or combed sliver. It is equally effective for the pre-combing or post-combing operation.

The Whitin Even-Draft operates at speeds up to 600 ft. per minute on carded stock (or 450 ft. on combed), producing sliver characterized by its evenness and uniformity.

The Whitin Super Lap machine offers a completely new concept in the preparation of Comber laps, effectively superseding all earlier lap forming techniques.

This most unusual new machine processes laps of superior quality from either 48 or 60 ends of drawn sliver, with weights of up to 1200 grs./yd.

Its production capacity is approximately 500 lbs. per hour, turning out laps weighing 35 lbs.

WHITIN

. . . *Begins on page 136*

E-72 — Button-attaching devices come in two models: One model has a Syntron feed and is suited for attachment to a Singer No. 175 button sewer. Another model uses a vibrating transparent box and is designed for Singer No. 114 button sewer. The Frank Parizek Mfg. Co.

E-73—Packaging machine (Amscomatic 75-H poly packager) is a compact design for packaging in polyethylene and other film materials. It's suited to modest production requirements, or to decentralized packaging. With an 8-ft. infeed conveyor, unit handles output of a single bag-loading machine; with a 10-ft. conveyor, two bag loaders. Speed—75 fpm. Two models: 75-FA, recommended for soft goods such as T-shirts, 3-packs, etc.; 75H, for rigid packages such as card-supported hosiery. Amsco Packaging Machinery, Inc.

E-74—Hosiery envelope is designed to boost sales of women's hosiery. It's printed in four colors and is made of paperboard with a transparent window. Package size: 7¼ x 9⅜ inches. Package will not rip, wrinkle, dog-ear, or soil. Lassiter Div., Riegel Paper Corp.

E-75—Course cut jersey, Model SABJ, comes in eight cut. This machine has 24 feeds and 4-color stripping. The pattern wheels give three times the repeat size as previous models. There are 24, 3-position pattern places. Supreme Knitting Machine Co., Inc.

E-76—Bag sealer, Model 1010, seals 30 to 120 packages per minute. Unit seals and trims in one automatic action. It seals to within $\frac{1}{32}$ inch of the contents, assuring a snug package. The bags are made from polyethylene fiber up to 6-mil. thickness. Unit comes with a variable speed drive, rheostat heat control, and conveyor that tilts to any angle and raises from 32 to 36 inches. Carbert Mfg. Co.

E-77—Steam finishing of knit fabrics or garments is combined into this one machine. The unit performs shrinking, decating, pressing, and finishing in one operation. Fabrics or garments are fed by continuous belts through the steaming and calendar sections. Unit operates at four different speeds. Steam is supplied by an electric generator of a 12-kw capacity. Speizman Knitting Machine Corp.

E-78—Automatic garment labeler makes labeling an unskilled job. The unit is completly shielded to meet FTC requirements. Average reading time is 10 to 12 garments per minute (500 dozen per day). Machine can be purchased or leased. Willcox & Gibbs.

E-79 — Tension device, called Twistension, provides snag-free unwinding of yarn in knitting regardless of cone, tube, or pirn size. It permits use of unthrown yarn, eliminating pigtails. Unit comes in sizes for various needs. For seeming machines. too. Roy D. Faigenbaum.

E-80—Label printer and applicator fits any conveyor system—horizontal, vertical, or angular. Unit handles pressure sensitive labels up to 2 inches square. Type is held by a locked-up chase or rubber plate adhered to metal. Speed—250 labels per minute. Carbert Mfg. Co.

E-81—Twister makes three types of packages—double head, tapered top, and tapered on both ends. Bobbin capacities go up to 2½ pounds on filament yarn, and 1½ pounds on spun yarn. The feed rolls have a 2½-in. diameter, and are gear drives. Fletcher Works.

E-82 — Sewing thread, called Stitchlok comes in nylon or Dacron. This thread is made from continuous filament yarn that was treated (texturized type) to produce a surface similar to spun yarn. This surface holds stitches firmly in place. Mason Silk, Inc.

NOW!

get up to 20% more production

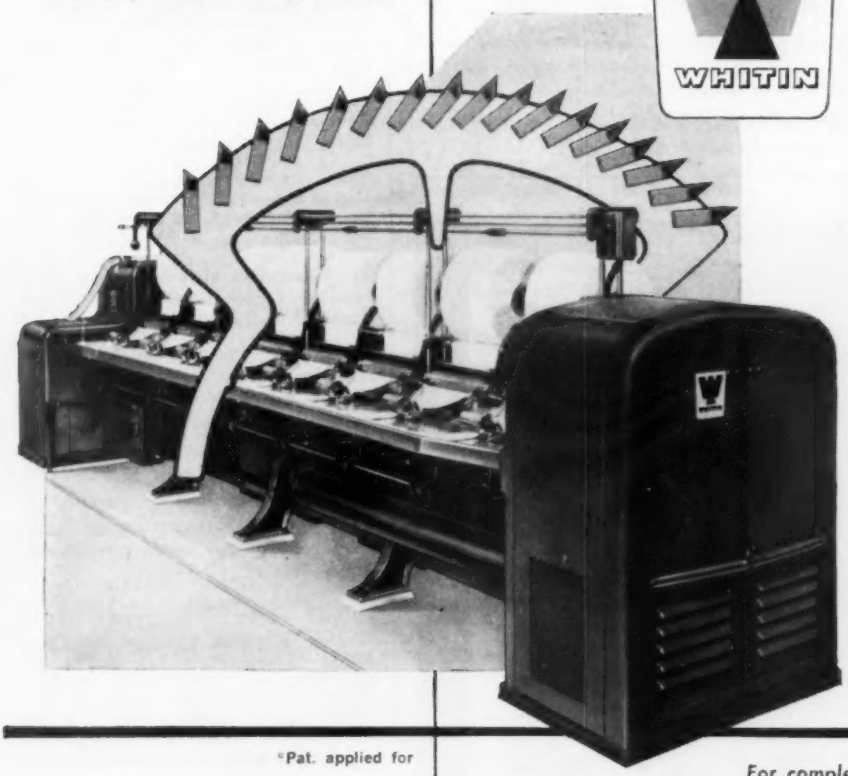
with the WHITIN Super J Comber

and the brand new "GOLDEN CIRCLE"* HALF LAPS

Get full-needle lap penetration and excellent quality combing using 1200 grain laps.

The Whitin Super "J" Comber has already earned an international reputation for its high production and trouble-free performance — but now, with the brand new Golden Circle Half Lap, its production potential is greater than ever.

The Golden Circle Half Lap is the patented product of Whitin research — an extensive research effort "zeroed in" on one objective only, to design and produce a half lap to excel all others in the "quality" combing of heavy grain laps. On Model J5 and J6 Combers, the Golden Circle Half Lap offers you:



SPECIAL FEATURES . . .

- Full-needle lap penetration.
- Lap processing up to 1200 grains.
- Anodized aluminum construction — lighter and stronger.
- Needle strips bonded in slots for greater rigidity.
- Progressive row needle spacing reduces plucking.
- Runs cleaner — stays cleaner.
- Consistent and better nep removal.
- Contoured for better air flow in piecing zone.
- Reduced brush wear.

*Pat. applied for

For complete information ask your Whitin representative or write direct to us.

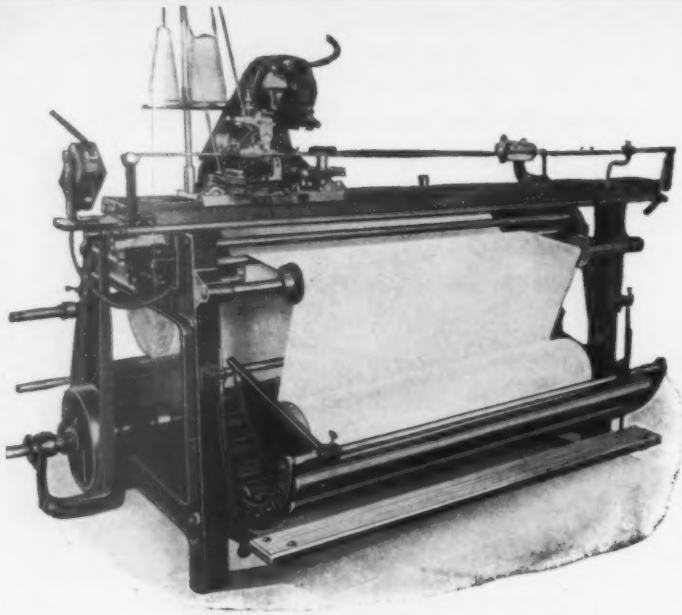
WHITIN MACHINE WORKS

WHITINSVILLE • MASSACHUSETTS

CHARLOTTE, N. C. • GREENSBORO, N. C. • ATLANTA, GA. • SPARTANBURG, S. C. • DEXTER, ME.

The best way to better yarns

CIRCLE 153 ON READER SERVICE CARD

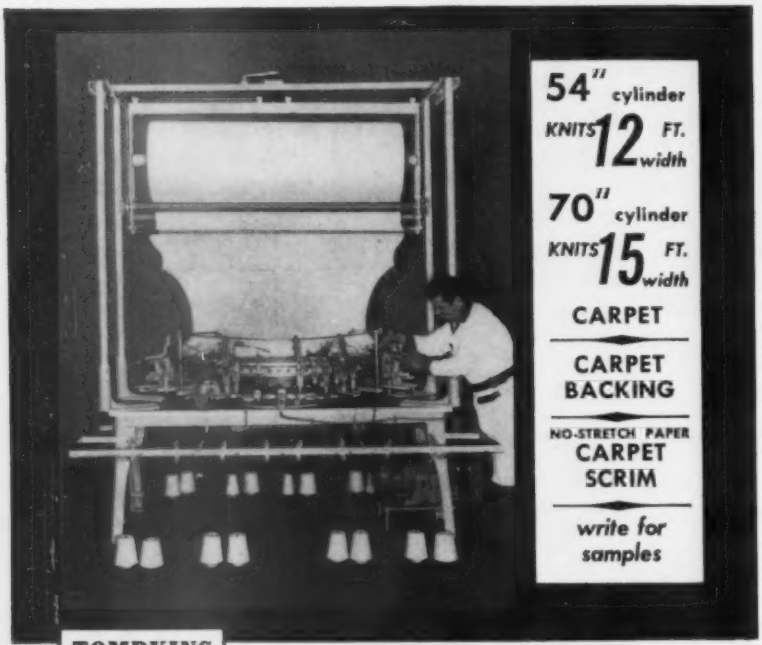


NO. 4 OPENING AND WINDING MACHINE

Unwinds, sews, measures and rewinds the cloth in rolls in one operation. Keeps cloth clean and free from wrinkles, making a hard straight roll. Can be motor driven and fitted with Dinsmore, Singer, or Merrow Butted Sewing Head as desired.

DINSMORE MANUFACTURING COMPANY
BOX 267 SALEM, MASSACHUSETTS

CIRCLE 250 ON READER SERVICE CARD



TOMPKINS SPRING NEEDLE D-1 CIRCULAR KNITTING CARPET MACHINE

Now you can produce 12 or 15-ft. wide carpet and carpet backing — including paper scrim — *faster, at lower cost* with a 54" or 70" TOMPKINS D-1. Both models use standard Tompkins parts *plus* the big quality and economy bonus of the time-proven Tompkins knitting principle. *Write for full details . . .*
TOMPKINS BROS. CO. • 623 Oneida St. • Syracuse 4, N.Y.
Circular Spring & Latch Needle Knitting Machines Since 1846

TEXTILE WORLD . . .

Calendar

June

AATT, monthly meeting, Della Robbia Room, Hotel Manger-Vanderbilt, New York, N. Y., June 7

Man-Made Fiber Textiles Institute, 33rd annual meeting, The Chantecler, Ste-Adele, Quebec, June 7 to 9

Lowell Technological Institute, textile workshop on fiber and yarn technology, Lowell, Mass., June 12 to 23

Massachusetts Institute of Technology, summer program, Elements of Textile Structural Mechanics, Cambridge, Mass., June 19 to 23

North Carolina State College, School of Textiles, cotton classing course, Raleigh, N. C., June 19 to 30

Silk & Rayon Printers & Dyers Association of America Inc., annual membership meeting, New York University Club, New York, N. Y., June 20

Southern Textile Association, annual convention, Ocean Forest Hotel, Myrtle Beach, S. C., June 22 to 24

Massachusetts Institute of Technology, summer program, Advanced Mechanics of Textile Structures, Cambridge, Mass., June 26 to 30

Marche Textile International, 3rd international textile fair, Paris, France, June 26 to July 1

Lowell Technological Institute, textile workshop on fiber technology, Lowell, Mass., June 26 to July 7

July

Gordon Research Conferences, Colby Junior College, New London, N. H., July 10 to 14

Lowell Technological Institute, textile workshop on dyeing and finishing technology and textile testing, Lowell, Mass., July 10 to 21

September

Combed Yarn Spinners Association, annual meeting. The Greenbrier, White Sulphur Springs, W. Va., Sept. 7 & 8

Carded Yarn Association, annual convention, The Cloister, Sea Island, Ga., Sept. 21 & 22

AATCC, national convention, Hotel Statler, Buffalo, N. Y., Sept. 27 to 29

TEXTILE WORLD . . . New Literature

For more information on any of these items, circle appropriate number on the Reader-Service Card, next to the back cover.

TEXTILE MACHINERY & AUXILIARY EQUIPMENT

L-1—Floor finish for exposed areas is the subject of Bulletin 81.129. Includes concise description of special applications, maintenance, and advantages. Photos illustrate the result. G. H. Tennant Co.

L-2—Casters are discussed in this 12-p., 2-color Catalog No. 12-A. Contains material, design, and construction details. Specification charts accompany each photo. Jenkins Metal Shops, Inc.

L-3—Centrifugal pumps for high pressure services are explained in Bulletin 722.4. Constructions, specifications, and mechanical data are displayed in charts and drawings. Goulds Pumps, Inc.

L-4—Vibration control is analyzed in Bulletin No. 4131. A variety of machines is shown. Details include type of machine, weight, and proper installation. Clark-Cutter-McDermott Co.

L-5—Stainless steel utensils (corrosion-resistant pails, batch cans, stock pots, beakers, funnels and shovels) are described in 4-p. catalog. Latest prices are included. Metalsmith.

CHEMICALS & SUPPLIES

L-6—Polyethylene glycols are comprehensively discussed in this 65-p. booklet. Contains information on physical properties, solubilities, specifications, and test methods. Union Carbide Chemicals Co.

L-7—Silicones are detailed in a 2-color, 8-p. catalog. Four general categories deal with silicones—fluids, protective coatings, electrical insulation, and rubber. General Electric Co.

L-8—Morpholine is the subject of a technical brochure. Items discussed are sales specifications, analytical procedures, handling and storage, and physical and chemical properties. Jefferson Chemical Co.

L-9—Essential oils, aromatic chemicals, and certified colors are presented in a 36-p. price catalog. Includes short descriptions and uses of products plus addresses. Dodge & Olcott, Inc.

L-10—Polypropylene glycols are described in a technical bulletin. Lists commercial or potential uses in a wide range of fields. Text covers characteristics and treatment. Jefferson Chemical Co., Inc.

ENGINEERING

L-11—Limit switch is covered in a 2-p. data sheet. Dimension drawings show sealed enclosure and contact arrangement. Operating data and electrical rating shown. Minneapolis-Honeywell Regulator Co.

L-12—Positive flow boiler is explained in Bulletin No. 1275. Drawings and photos illustrate circulation, hinged front and rear covers, and hinged dry and wet back construction. Orr & Sembower, Inc.

L-13—Wiring devices, fuse specialties, fastening devices, and masonry drills are included in a 36-p. pocket size catalog. Contains photos, specifications, and descriptive data. Holub Industries, Inc.

L-14—Set screws are analyzed in an 8-p. technical bulletin. Includes photos of grain, structures, and tabulations of holding power. Compares knurled point with other types. Standard Pressed Steel Co.

L-15—Variable speed drives are the subject of this 16-p. bulletin. Shows a number of pneumatic pressure control systems. Drawings and descriptions illustrate. Reliance Electric & Engineering Co.

. . . *Turn the page*

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LOOM PICKERS . . . RAWHIDE and PLASTIC

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What you see here is the *modern* way to store and handle loom yarn beams. And the "heart" of this system is STURDI-BILT adjustable storage racks. Engineered for strength, safety and savings, STURDI-BILT Racks are now in use by more and more leading textile mills. Learn how you, too, can save with STURDI-BILT. Send for free STORAGE PLANNING GUIDE, along with case history photos of textile installations.

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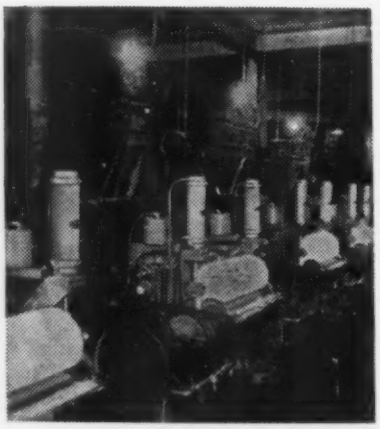

Installation on 1913 model Kitsons

*Patent No. 2,871,519
Other U. S. and Foreign Patents Pending

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NEW LITERATURE

. . . *Begins on page 155*

For more information on any of these items, circle appropriate number on the Reader-Service Card, next to the back cover.

L-16—Humidity chambers are detailed in Bulletin No. 7005C. Charts list dimensions, voltage, maximum watts, and price. Graphs show possible conditions. Detailed construction data. Blue M Electric Co.

L-17—Film sprockets are covered in the 2-color Brochure SP-52. Dimensional charts and diagrams help to complete an inclusive picture of each model. Made-to-order section. LaVezzi Machine Works.

L-18—Heat exchangers using standardized components are explained in 24-p. Bulletin No. 101. Contains complete engineering data including design and construction details. The Griscom-Russell Co.

L-19—Motor couplings are discussed in 6-p. Folder 2975. Includes specification and dimension chart. Concise text aids in product selection. Photos illustrate all models. Link-Belt Co.

L-20—Storage water heaters are described in an 8-p. bulletin. Lists storage and heating capacities, dimensions, and material thicknesses for vertical and horizontal heaters. The Patterson-Kelley Co., Inc.

INSTRUMENTS & TESTERS

L-21—Abrasion tester is explained in a 2-p. data sheet. Includes information on its applications, operation, features, and instrument specifications. United States Testing Co., Inc.

L-22—Insulation testers are discussed in 12-p. Bulletin 21-45-45. Photos and diagrams supplement the text. Detailed chart contains complete ordering data. Three-hole punched. James G. Biddle Co.

L-23—Twist counter for yarns is detailed in this 2-p. bulletin. Diagram illustrates all parts. Text includes application, operation, and specifications. United States Testing Co., Inc.

Out Goes
LINT · FLY
TRASH
from your
SPINNING FRAMES
and ROVING FRAMES
Quickly • Economically

by using
M·B AMOSKEAG PNEUMATIC ROLL PICKER
New, Improved MODEL 59

A pneumatic tool especially designed for the specific purpose of REMOVING LINT and FLY from the top rolls of Spinning Frames and Roving Frames. Saves time and does a better job by substituting mechanical cleaning instead of laborious hand methods. Air deflector prevents fly and lint being blown into yarn when spinning. Adjustable valve permits any desired spindle speed.

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Your very own publication, for instance, that you are reading right now. Read it inquisitively. Read it imaginatively. Pass it along to your fellows, tell them how much they can get out of it, too . . .

Men who read more . . . earn more!

NEW LITERATURE

. . . *Begins on page 155*

For more information on any of these items, circle appropriate number on the Reader-Service Card, next to the back cover.

L-24—Mechanical convection ovens with reactor control are the subject of 3-color Bulletin No. 1960. Diagrams explain the operation. Specification charts and prices are listed. Blue M Electric Co.

L-25—Weight sensing is discussed in this 8-p. reference manual. Labeled diagrams show representative applications. Photos illustrate models for industrial uses. The Exact Weight Scale Co.

L-26—Electronic control centers are detailed in 8-p. Brochure F-8031. Includes remote temperature indication, recording, and control point adjustment by electric instruments. Barber-Colman Co.

L-27—Abrasion pilling tester is covered in this 2-p. bulletin. Contains labeled diagram of features. Sections on application, operation, and specifications are included. United States Testing Co., Inc.

MATERIAL HANDLING

L-28—Storage planning guide is available in a 2-color folder. Planning fundamentals are outlined in text and drawings. Contains an offer for free planning help. Union Asbestos & Rubber Co.

L-29—Storage racks are discussed in this 2-color bulletin. Shows charts and diagrams on specifications, loads, and applications. Includes photos of various models. Union Asbestos & Rubber Co.

CLEANERS & FILTERS

L-30—Floor machine is explained in 4-p. Bulletin 81.5 D-R. Diagrams operation. Photos illustrate uses. Mechanical data is included. Accessories and features are pictured. G. H. Tennant Co.

. . . *Turn to page 158*

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*with Dow Corning Silicone Defoamers**

There's a *right* tool for every job. In foam control it's Dow Corning silicone antifoamers or defoamers . . . job-proved thousands of times over as the most efficient, most economical, and most versatile foam suppressors available.

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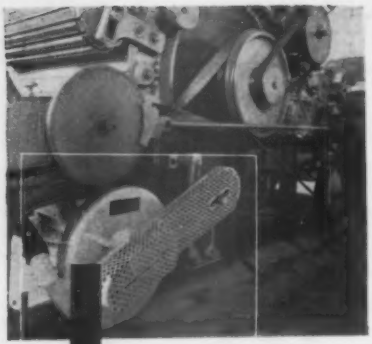

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NEW LITERATURE

. . . *Begins on page 155*

For more information on any of these items, circle appropriate number on the Reader-Service Card, next to the back cover.

L-31—Unit air filter is introduced in 8-p. Bulletin No. 228. Drawings show frame arrangements and pre-filters. Dimensions, performance, and media data are listed. American Air Filter Co., Inc.

L-32—Lint filter is detailed in the new 4-p. brochure. Contains information on size and efficiency characteristics. Explains drive mechanism. Rockwell Standard Corp., Air Maze Div.

L-33—Air distribution equipment is discussed in this 8-p. catalog. Included is a new continuous line of extruded aluminum ceiling diffusers and modifications to these diffusers. Barber-Colman Co.

L-34—Centrifugal filter systems are described in 2-p. Bulletin 802. Materials of construction are listed. Contains data on optional equipment and price list. Sethco Mfg. Corp.

GENERAL

L-35—Scales and weighing equipment for industrial, laboratory, and commercial use are detailed in this 8-p. catalog. Specifications on more than 30 different scales are listed. The Exact Weight Scale Co.

L-36—Equipment leasing is analyzed in a 24-p. study. Cash flow charts are included. Comparative costs of leasing and outright cash purchase are discussed. Foundation for Management Research.

L-37—Cost analysis booklet is based on interviews with 55 users of Cushman Trucksters. Describes trucks in use, type of work, length of service, breakdown of mileage, and costs. Cushman Motors.

L-38—Jet stream cleaning is discussed in this folder punched for looseleaf binder. Complete operation is explained. Photos show cleaner being used for specific applications. Oakite Products, Inc.

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While the supply lasts, the following reprints will be available at these new prices. (Old prices are in parentheses.)

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TEXTILE WORLD . . .

Advertisers' Literature

To get items you want offered in the advertisements in this issue, just circle numbers on Reader-Service Card next to the back cover. If you don't need all the bulletins listed under one number, please write on card the name of bulletin desired.

A-350—Pneumatic roll picker. Descriptive literature is yours on request. M-B Products.

A-351—Textile tester. The CRE manual tells about the versatility of this new push-button instrument. Scott Testers, Inc.

A-352—Pneumatic lap control. Send for illustrated brochure. Livingston & Haven, Inc.

A-353—Adjustable storage racks. For further information send for "Storage Planning Guide." Sturdi-Bilt, Material Handling Div., TW-61.

A-354—Controls-cloth guides. Catalog No. EG84 lists controls for cloth and web guiding systems. GPE Controls, Inc.

A-355—Softeners. Write for data Bulletin C-3 for further details. W. F. Fancourt Co.

A-356—Filters. For further information request Bulletin No. 150. Air-Maze Div.

A-357—Vibration mounts. Sample and free book is yours on request. Unisorb Div. of Felters Co.

A-358—Silent chain drives. For full details send for Book 2425. Link-Belt Co.

A-359—Belts. Send for Catalog L160 for information on flat and round belting. Chas. Bond Co.

A-360 — Factoring. Information booklet "Profit Through Factoring" is yours on request. Walter E. Heller & Co.

A-361—Trucks. For platform and lift-jack trucks send for Catalog No. T-54. The Fairbanks Co.

A-362—Traveler cleaners. Send for 8-p. bulletin for further details. American Monorail.

A-363—Variable speed drives. Request Bulletin 25103. T. B. Wood's Sons Co.

A-364—Poly-v drive. For further details write for Bulletin M141. Raybestos-Manhattan, Inc.

A-365—Silicone defoamer. Write for sample and manual on foam control. Dow Corning Corp., Dept. A518.

A-366—Wetting agent. Data sheet TA-63 "GAFAC Surfactants in Textile Processing" on request. Antara Chemicals, division of General Aniline & Film Corp.

A-367—Hydrogen peroxide. Booklet "Solvay Activate Hydrogen Peroxide Bleaching Process for Cotton" is available. Solvay Process Div.

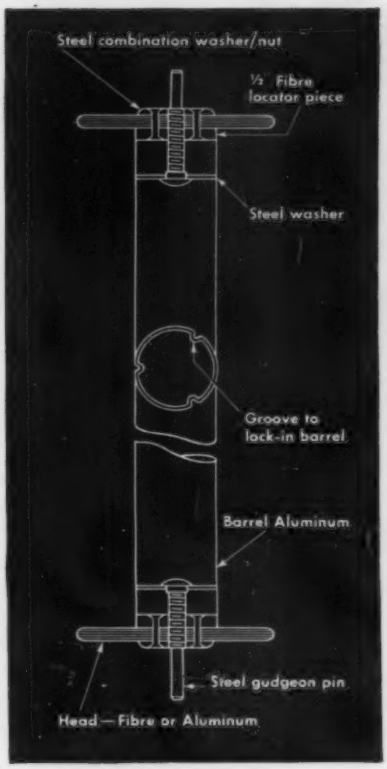
A-368—Filters. Bulletin 234 is available on request. American Air Filter Co., Inc.

A-369—Rotary pressure joints. Catalog S-3002 gives complete details. Johnson Corp.

A-370 — Anti-wrinkle expander. Write for data sheet to obtain details. Kay Machine Co., Inc.

Correction:

In the article "A Relocated Weaveroom: Down in the Basement" (TEXTILE WORLD, April 1961, p. 78), the editors identified Ben F. Hagood and Ben F. Hagood, Jr., as "owners" of Pickens Mill. A more appropriate identification would have been "managers."



NVF'S NEWLY-PATENTED* "LE" JACK SPOOL FOUR WAYS BETTER!

Now, give your carded wool yarn processing all the high production, high precision advantages of patented "LE" Jack Spool efficiency.

This proven "LE" Jack Spool can mean important dollar savings to you:

1. **TIGHTER HEADS!** Plus ease of head replacement right on the job! Only four movements required to replace—downtime and repair shop expense are greatly reduced.
2. **SHOCK ABSORBING!** Heavy-duty fibre *locator piece* riveted inside the spool head serves to absorb shock, give a new spool resilience that resists sharp blows, sudden drops and drive shocks.
3. **REDUCED BREAKAGE!** Repeated field tests prove the new fibre *locator piece* reduces denting and breaking by reducing bobbin rigidity.
4. **ASSURED CONCENTRICITY!** Precision manufacturing, light weight, tight heads, and a new resilience, combine to prevent loss of concentricity for truer, smoother running.

Add to these advantages Lestershire's aluminum barrel-fibre head efficiency and you are assured a damage-resistant, hard working Jack Spool that can improve your carding operations.

Write for your free copy of *Lestershire Bobbins*, a comprehensive catalog on modern spool and bobbin design. Address Dept. BB6.

*The NVF "LE" Jack Spool has been granted U.S. Patent #2,986,357.

NVF

NATIONAL VULCANIZED FIBRE COMPANY
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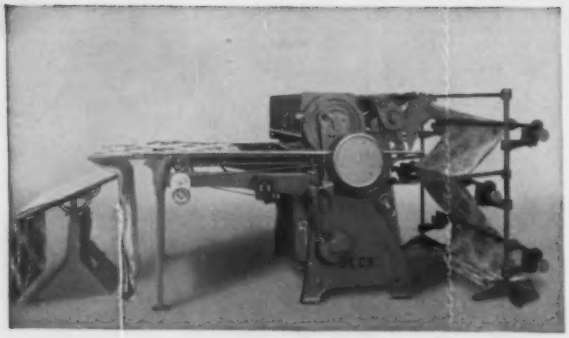

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Measuring, Cutting, Doffing in One Operation

Fully automatic cloth cutting! That's the answer to today's profit squeeze. Why do three operations—spread, measure and cut—when you can do them all-in-one and much faster too? The Beck Sheet Cutter can turn out 2400 pieces an hour in operation with one operator.

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TEXTILE WORLD . . .

News About Suppliers

C. CHARLES RENDINO (left) has joined the Textile Industries Sales Div. of The Foxboro Co., Foxboro, Mass. HARRY M. THOMPSON (center) has assumed control of the Batson Mfg. Co., Greenville, S. C. EDWARD CRANSHAW (right) has been appointed manager of sales and service of the Doffer Div., Draper Corp., Hopedale, Mass.

ALLIED CHEMICAL CORP., New York, N. Y.—Has appointed Dr. Herbert Wohlers to the new position of director of research and development, chemicals and dyestuffs, of the National Aniline Div. Dr. Elwood F. Booth, Jr., succeeds Dr. Wohlers as director of research for Solvay Process Div. . . . **ALLIS-CHALMERS MFG. CO.**, Milwaukee, Wis.—Has named Roy M. Casper general manager of its Power Equipment Div. . . . **ATLAS POWDER CO.**, Wilmington, Del.—Has announced construction of a plant designed to produce 50-million pounds a year of glycerin and related polyols. The $17-million plant will be located on the site of the company's Atlas Point chemicals plant south of Wilmington and completion is scheduled for the second quarter of 1962.

LOUIS P. BATSON CO., Greenville, S. C.—Has appointed John S. Flowe to the Eastern North Carolina and Eastern Virginia territory of its sales organization. . . . **BONAS BROTHERS WEAVEMATIC, LTD.** of England—Has leased 10,000 sq. ft. at 300 Charels St., Providence, R. I., as sales headquarters for its operations in this country. . . . **BRITISH ENKALON LTD.**, Antrim, Northern Ireland—Is building a plant to make nylon yarn and plastic raw material. The plant will go on stream in 1962. British Enkalon Ltd. is being built jointly by British Enka Ltd., Liverpool, England, and Algemene Kunstzijde Unie, Arnhem, Netherlands. . . . **BURKART-SCHIER CHEMICAL CO.**, Chattanooga, Tenn. —Will manage the sale and distribution of Edward Mendell Co., Inc. (Yonkers, N. Y.) products in the South.

CIBA CO., INC., Fair Lawn, N. J.—Has appointed A. L. Perrin as manager of its Midwest district. He succeeded J. Gordon Stott, who retired after 40 years of service. . . . **CORN PRODUCTS SALES CO.**, New York, N. Y.—Has named David Miller industrial sales representative for the upstate New York area of the Industrial Div. His headquarters will be in Albany. . . . **E. I. DU PONT DE NEMOURS & CO.**, Wilmington, Del.—Has appointed Millard G. Gamble as director of marketing services in the Textile Fibers Dept. The company also announced the establishment of a new modern dyeing and textile finishing laboratory in Charlotte, N. C., by its Dyes and Chemicals Div. . . . **FOOD MACHINERY & CHEMICAL CORP.**, San Jose, Calif.—Has announced two appointments in the Chlor-Alkali Div. William M. Clark has been named sales manager for the Southern district with headquarters at Charlotte, N. C., and William D. Neese sales manager for the Midsouthern district with headquarters at Cincinnati, Ohio.

GENERAL ANILINE & FILM CORP., New York, N. Y.—Has announced the relocation of its Chemical Group's Chicago

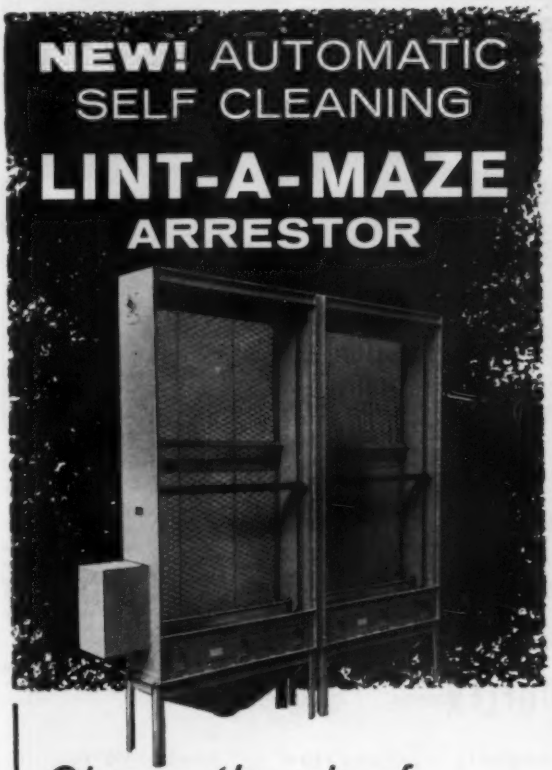
branch office to 1950 N. Hawthorne Ave., Melrose Park, Ill. The new property is a 35,000-sq.-ft. building. The building houses the office, customer-service-laboratory, and warehouse which serves the 18 states of the Chicago branch territory. . . . **GENERAL ELECTRIC CO.,** Schenectady, N. Y.—Has announced a realignment of its industrial marketing organization in Schenectady with the establishment of six new managerial posts: David A. Yates, manager of systems procedures and practices; Charles B. Elledge, manager of industrial sales and engineering; George R. Brown, manager of metal-rolling application engineering; L. Frank Lewis, manager of advance plannings and projects; F. Morley Roberts, manager of application engineering development.

GOULDS PUMPS, INC., Seneca Falls, N. Y.—Has employed A. J. "Woody" Hermann as engineering product manager. . . . **KELCO CO.,** New York, N. Y.—Has elected Robert O. Davison vice president. He will also continue as manager of the firm's Eastern Div. with headquarters at 75 Terminal Ave., Clark, N. J. . . . **KIM-TEX SIZING CO.,** Spartanburg, S. C.—Has announced that it is no longer connected with Moretex Chemical Products, Inc., but has an agreement with Moretex for making Sizing and other products . . . **KOPPERS CO., INC.,** Pittsburgh, Pa.—Has announced the promotion of S. M. Robertson to the position of product manager, polystyrene, by the Koppers Div. The company has also announced the promotion of Jonas P. Sipe to product manager, dylite expandable polystyrene of the Plastics Div. R. R. Bench succeeds Mr. Sipe as sales manager of the Division's Eastern District.

NATIONAL VULCANIZED FIBRE CO., Wilmington, Del.—Has transferred Lestershire Textile Bobbin manufacturing facilities from Johnson City, N. Y., to the company's new Hartwell Ga., location. Plans call for integration of the Fischer and Lestershire manufacturing operations in Hartwell. . . . **PENNSALT CHEMICALS CORP.,** Philadelphia, Pa.—Has appointed Donald Macfarlan as sales manager of inorganic chemicals. . . . **RADIO CORP OF AMERICA,** New York, N. Y.—Has named Arthur A. Katz to the newly created position of manager of applied programming, RCA Electronic Data Processing Div. . . . **RAYONIER, INC.,** New York, N. Y.—Has announced that it recently placed in operation a new plant at its Fernandina Beach, Florida division for the manufacture of a new material called Ethylose. . . . **ROBERTS CO.,** Sanford, N. C.—Has announced that J. Carlile Martin has joined the company as a special representative in the technical sales service department.

SACO-LOWELL SHOPS, Boston, Mass.—Has appointed Allen F. Barney as director of advertising for the Textile, International, and Replacement Parts Divs. . . . **L. H. SHINGLE CO.,** Camden, N. J.—Has named Harold P. Monica director of sales of the Industrial Div. . . . **JAMES TALCOTT, INC.,** New York, N. Y.—Has elected Clarence A. Adams an assistant secretary. . . . **WHITIN MACHINE WORKS,** Whitinsville, Mass.—Has been licensed to make and sell the newly developed Deering Milliken automatic doffing system for automatic spinning frames and twisters.

FAFNIR BEARING CO., has recently completed a 460,000-sq-ft. plant at Newington, Conn. The plant, including the site and contents, represents an investment in excess of $6-million. It is capable of producing 50,000 bearings a day.



Cleans the air of...

*** LINT**
*** CHAFF**
*** FIBROUS MATERIAL**

AIR-MAZE LINT-A-MAZE FILTERS are specially designed to provide 98% or more efficiency in removing heavy concentrations of lint, chaff, leather cuttings and similar materials from the air. Brushes mounted on a chain carrier continually sweep and automatically clean the collector screens. Collected material is deposited in a hopper for reprocessing or sale. Lint-A-Maze filters offer these important advantages:

- Low initial cost . . . low operating cost
- Require less than 50% of the space normally needed
- Virtually eliminate maintenance – no rolls or blankets to replace, no washing or cleaning
- Handle wet or dry impurities
- Can be installed in any recirculating air opening, ventilating or air-conditioning system
- Available for airflow requirements from 7,000 to 150,000 CFM, can handle air velocities from 250 to 1900 FPM.

FREE! For additional information write for Bulletin No. 150.

AIR-MAZE DIVISION
CLEVELAND 28, OHIO
ROCKWELL-STANDARD CORPORATION

CIRCLE 161 ON READER SERVICE CARD

BE SURE YOU SPECIFY—
ON YOUR NEW FRAMES PNEUMAFIL®

Only PNEUMAFIL
gives you exclusive "air flow" suction to "swallow" more air, capture more lint, enable faster front roll speeds. Special ring diffusor fan gives widest range of operation at peak efficiency. Choice of three discharge arrangements.

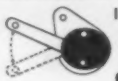
plus

DELTAFLUTE

A powerful new "lap fighter." Unique shape allows closer flute positioning under front roll. Shorter, wider orifice concentrates air stream at point of maximum lint generation for remarkably good cleaning.

plus

DUFLEX SUSPENSION



Instant and effortless two-position suspension of flutes permits operator to work around rolls with both hands. Eliminates danger of scratched orifices which cause lint accumulation.

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TEXTILE MILLS AND
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Automatic Machinery For
Cleaning And Refinishing
QUILLS And BOBBINS

NASH *J. M.* NASH *Company, Inc.*
131 Jackson St., Oshkosh, Wisc.
"Special Finishing Machines Since 1890"

CIRCLE 162 ON READER SERVICE CARD

TEXTILE WORLD . . .

News About Men

STEPHEN L. UPSON (left) has been elected an executive vice president and general counsel, and CHARLES F. MYERS, Jr., (right) has been elected an executive vice president and treasurer of Burlington Industries, Inc., Greensboro, N. C.

Gordon L. Alling has been named superintendent of the Littleton plant (Littleton, Mass.) of United Elastic Corp., East Hampton, Mass.

George A. Bates has joined American Finishing Co., Memphis, Tenn., as assistant to the president.

John P. Baum, vice president of J. P. Stevens & Co., Inc., has been elected president of the Georgia Textile Manufacturers Association, Inc., Atlanta, Ga.

S. Maxwell Bishop has been named comptroller of The Felters Co., Boston, Mass.

Robert Booth has been elected vice president of The Kendall Co., Boston, Mass.

Gordon I. Button has been named president of Catlin Farish Co. (New York, N. Y.), division of Burlington Industries, Inc., Greensboro, N. C.

Irving B. Cohen, merchandising co-ordinator and director of corporate forward planning, has been elected a vice president of J. P. Stevens & Co., Inc., New York, N. Y.

Charles Crape has been elected president of Burlington House Fabrics Co., division of Burlington Industries, Inc., Greensboro, N. C.

William E. Cruickshank has been elected a director of the Bradford Dyeing Association, Bradford, R. I.

Stephen P. De Mallie has been appointed to the newly created position of market analyst at Greenwood Mills, Inc., Greenwood, S. C. He will make his headquarters in New York.

J. H. Dusenbury has joined Deering Milliken Research Corp., Spartanburg, S. C.

Arthur B. Edge, Jr. has assumed direct responsibility for all domestic sales and customer service as president of Callaway Mills, Inc. (New York, N. Y.), sales subsidiary of Callaway Mills Co., La Grange, Ga.

George W. Gibson has resigned as vice president of Wm. Skinner & Sons (New York, N. Y.), recently acquired by Indian Head Mills, Inc., Cordova, Ala.

Jack A. Goldfarb has been elected chairman and president of Fruit of the Loom, Inc. (Pontiac, R. I.), recently acquired by Philadelphia & Reading Corp., New York, N. Y.

R. David Hall, chairman of the board of Climax Spinning Co. (Belmont, N. C.), has been elected president of the American Cotton Manufacturers' Institute, Inc., Charlotte, N. C.

Dr. Hugo Hofmann has been named chairman of the board of Beaunit Mills, Inc., New York, N. Y.

John M. Hughlett has resigned as vice president and director of J. P. Stevens & Co., Inc., New York, N. Y.

William H. Jackson has been appointed vice president and treasurer of Sayles Finishing Plants, Inc., Saylesville, R. I. He succeeds Edgar R. Coddington, who resigned.

Mark E. Johnson has assumed the duties of cotton buyer at Mt. Vernon Mills, Inc., Baltimore, Md. He succeeds George D. Bennett.

Amos R. Kearns, Jr., vice president of Crown Hosiery Mills, Inc., High Point, N. C., has taken over the firm's New York offices.

Ralph McCard has retired as vice president and manager of Nichols-McCard, Inc., (Bedford, Mass.) division of Nichols & Co., Boston, Mass.

Andrew McNulty has been appointed to the newly created post of director of research and development at Kenyon Piece Dye Works, Inc., Kenyon, R. I.

Kenneth Merrill has been named to the new post of merchandise manager for yarn sales division, Deering Milliken & Co., Inc., New York, N. Y.

A. W. Olson engineering superintendent at Landrum Mills (Landrum, S. C.), has accepted a position as general purchasing agent at Bigelow-Sanford Carpet Co., Inc., Thompsonville, Conn. His headquarters will be at Belton Yarn Mills, Belton, S. C.

Robert M. Perry has been elected president of Sydney Blumenthal & Co., Inc. (New York, N. Y.), division of Burlington Industries, Inc., Greensboro, N. C.

Everett C. Reed has been named president of Albany Felt Co., Albany, N. Y. He succeeds John C. Standish.

Robert Riesner has been elected a vice president of Fruit of the Loom, Inc., Pontiac, R. I.

George H. Roderick has been named a vice president of J. P. Stevens & Co., Inc., N. Y.

William H. Ruffin, president of Erwin Mills, Inc. (Durham, N. C.), has been elected first vice president of the American Cotton Manufacturers' Institute, Inc., Charlotte, N. C.

Howard R. Siggelko has been promoted to superintendent of the Spartanburg (S. C.) plant of Union Bag-Camp Paper Corp., New York, N. Y.

Lyman H. Smith has been named vice president and treasurer of Berkshire Hathaway, Inc., New Bedford, Mass.

Robert G. Stevens has been appointed vice president, production, of Gleknit Mills, Inc. (New York, N. Y.), a subsidiary of Glen Raven Mills, Inc., Glen Raven, N. C.

Robert T. Stevens, president

PETER G. SCOTESE, a vice president of Indian Head Mills, Inc. (New York, N. Y.), is now head of Wm. Skinner & Sons, converting operations in New York.

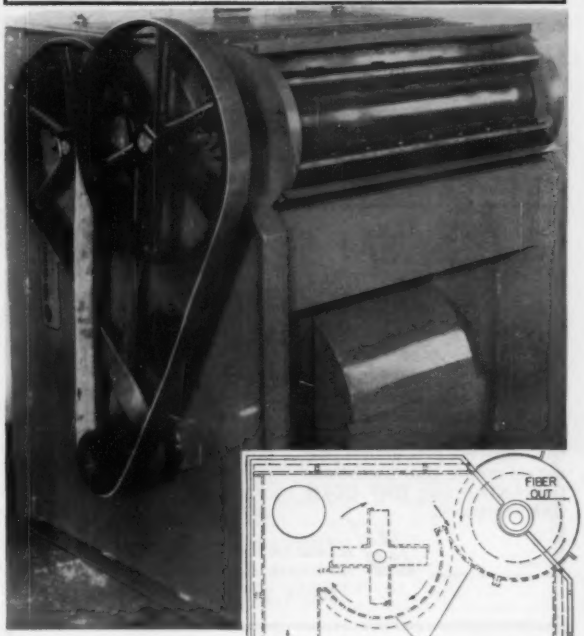
JOHN G. GRAVLEE, Jr., has been named president of Burlington Throwing Co. (High Point, N. C.), a division of Burlington Industries, Inc., Greensboro, N. C.

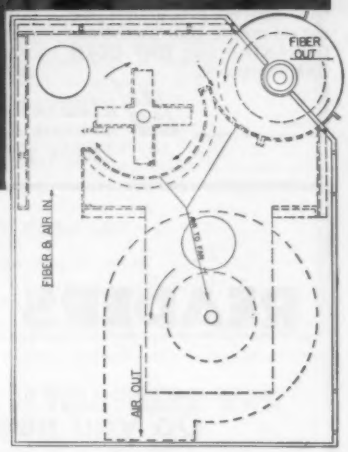
FIBER CONTROLS FC-83

SCREENLESS CONDENSER

HEAVY DUTY—HIGH PRODUCTION

SELF-CLEANING CONDENSER





Model FC-83 SCREENLESS CONDENSER made for Heavy Duty & High Production, has proven itself in efficiency & capacity production.

Will handle up to 2000 pounds of fiber per hour through ducts approximately 200 feet in distance.

It contains 2 Doffer Blades and 2 Separator Plates and a 16 inch self-contained Fan with 24 inch diameter.

It will discharge fiber without:

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—Rolling or
—Pilling

Inquiries about more complete details of this equipment. Call or write:

U. S. Sales Agents:
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WRAP ROLLED GOODS 4 TIMES FASTER

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SUBMIT ROLL-WRAPPING PROBLEMS TO

Automatically packages rolled goods in neat, rigid, non-slip kraft paper wrapping. Delivers paper from roll stock, applies glue, cuts paper to size, and wraps. Can be adapted to your needs.

DYKEN MFG. CO. 123 JACKSON STREET OSHKOSH, WISCONSIN

CIRCLE 256 ON READER SERVICE CARD

We don't just sell static eliminators

WE SELL STATIC *ELIMINATION*—

Yes, guaranteed elimination of static problems that slow-up production and eat up profits, that's what our **CURASTAT** and **OXY COLD BAR** represent.

Get rid of static-caused headache forever. Send us specifications of your equipment. We'll provide expert recommendations without obligation. **DON'T DELAY!**

1-196-1

HERBERT PRODUCTS, INC.
188 LINDEN AVENUE • WESTBURY, N. Y.

CIRCLE 257 ON READER SERVICE CARD

READERS . . .

Do you need more information on a product or service advertised?

USE READER-SERVICE CARD FOR PROMPT REPLY.

News About Men . . . *Begins on page 162*

RICHARD GRILLS (left) has been appointed production manager of the Westerly plant (Westerly, R. I.), Bradford Dyeing Association, (U.S.A.) Bradford, R. I. EUGENE C. ECCLESTON (right) has been promoted to service manager of the New York office, succeeding Mr. Grills.

of J. P. Stevens & Co., Inc., has been named second vice president of the American Cotton Manufacturers' Institute, Inc., Charlotte, N. C.

Sidney W. Tingen, treasurer of West Boylston Mfg. Co. (Montgomery, Ala.) has been elected president of the Alabama Textile Manufacturers Association, Montgomery, Ala.

Dr. J. W. Weaver has been appointed manager of Central Laboratory, Cone Mills Corp., Greensboro, N. C.

Parker N. Wheeler has been named vice president for sales of The Felters Co., Boston, Mass.

R. D. Williams, Jr. has been elected president of Callaway Products, Inc., and Servaround Leasing Corp. (La Grange, Ga.). He will continue as vice president of the parent company, Callaway Mills Co., La Grange, Ga.

OBITUARIES

Charles L. Auger, Jr., 71, retired president of the former Fontaine Converting Works, Inc., Martinsville, Va.

Henry Bell, 45, supervisor, Sterling Dyeing & Finishing Co., Inc., Philadelphia, Pa.

Barrie B. Blackwelder, Sr., 76, chairman of the board of Quaker Meadows Mills (Hildebran, N. C.) and former head of Shuford Mills, Inc., (Hickory, N. C.).

Henry W. Bowman, 79, president, H. W. Bowman Ltd., New York, N. Y.

William N. Freyer, 57, executive vice president and director of Bigelow-Sanford Carpet Co., Inc., Thompsonville, Conn.

Otto R. Froelicher, 69, chairman of the board and treasurer, Schwarzenbach Huber Co., New York, N. Y.

Thaddeus S. Grimes, 94, retired inventor and design engineer, Lummus Cotton Gin Co., Columbus, Ga.

Robert D. Kerr, 62, president, Kerr Hosiery Mill, Inc., Dayton, Tenn.

Clarence L. Meyers, 75, founder and chairman of the board, Clarence L. Meyers & Co., Philadelphia, Pa.

James T. Phillips, 67, former owner and chairman of the board, Buck Creek Cotton Mills, Siluria, Ala.

Timothy R. Stearns, 63, president, Reliance Mfg. Co., New York, N. Y.

A. E. Tanner, 58, vice president of Figel Knitting Mills, Inc., Albany, N. Y.

Joseph B. Warne, 81, former secretary-treasurer, Defiance Mfg. Co., Barrowville, Mass.

CLASSIFIED SEARCHLIGHT SECTION ADVERTISING

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The advertising rate is $14.25 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

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Send New ADS or Inquiries to Class. Adv. of Textile World, P. O. Box 12, New York 36, N. Y., For July Issue Closing June 16th

ADDRESS BOX NO. REPLIES TO: Box No. Classified Adv. Div. of this publication. Send to office nearest you.
NEW YORK 36: P. O. Box 12
CHICAGO 11: 645 N. Michigan Ave.
SAN FRANCISCO 11: 255 California St.

POSITION VACANT

Wanted: Textile Technician for small novelty mill in N. E. Pennsylvania. Manufacturers of silks, synthetics, yarn-dye fabrics. Knowledge of all phases of manufacturing, warping, sizing and weaving. Also, fabric analysis, construction and costs. Able to design fabrics on shaft looms. State experience along with all particulars and salary desired to P-6743, Textile World.

POSITIONS WANTED

Plant Sup't. or manager. 46 years of age, twenty-six years experience in all phases of cotton and rayon yarns and cloth. Just returned to states past nine years General Sup't in Central America. Best references, available immediately. Speak Spanish. Will accept position in or out of Country. Capable of supervising erection of machinery, opening thru finishing and putting into production. PW-6588, Textile World.

Designer, Manager, cotton, wool, synthetics, mechanically inclined, original ideas, linquist, college education, seeks domestic or foreign challenge. PW-6448, Textile World.

Textile Superintendent—Designer and A-1 loom man. Wide experience on plain and diversified fancy weaving on cotton synthetics and saran. Available on short notice. PW-6272, Textile World.

Tricot/Raschel Technician, Designer, seasoned Executive, vast practical experience. Novelty fabrics, trimmings. Requires challenging position. Available August. References. PW-6814, Textile World.

MANUFACTURER'S AGENT
SOUTHERN STATES
Desires a line of equipment of merit. Commission basis. Selling to:
FINISHING PLANTS and WEAVING PLANTS
Thorough, experienced, successful coverage.
RA-6525, Textile World
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

"Put Yourself in the Other Fellow's Place"

TO EMPLOYERS

TO EMPLOYEES

Letters written offering Employment or applying for same are written with the hope of satisfying a current need. An answer, regardless of whether it is favorable or not, is usually expected.
MR. EMPLOYER won't you remove the mystery about the status of an employee's application by acknowledging all applicants and not just the promising candidates.
Mr. EMPLOYEE you, too, can help by acknowledging applications and job offers. This would encourage more companies to answer position wanted ads in this section. We make this suggestion in a spirit of helpful cooperation between employers and employees.
This section will be more useful to all as a result of this consideration.

Classified Advertising Division
McGraw-Hill Publishing Co., Inc.
330 West 42nd St., New York 36, N. Y.

CUSTOMER SERVICE REPRESENTATIVES

Continued expansion and diversification within the Celanese Fibers Company has developed the need for several outstanding Customer Service Representatives.

The ideal candidates will have from 5 to 10 years of varied mill experience with synthetic fibers, preferably in filament processing, staple processing and dyeing and finishing. A BS degree in textiles with a major in engineering, chemistry or manufacturing plus proven ability to work independently are additional requirements.

To the right men we can offer excellent advancement opportunities, a full benefit program and salaries commensurate with experience. Send your resume in confidence to Mr. Gerald J. Kiefer, Section 125.

Celanese FIBERS COMPANY
A division of Celanese Corporation of America
P. O. Box #1414 Charlotte 1, N. C.

WANTED

DYER AND FINISHER

Man experienced in dyeing and finishing elastic fabrics to fill responsible position with leading manufacturer located in nice progressive southern city. Good working conditions. Excellent opportunity for right man. Reply stating age, experience, technical training, etc. Replies confidential.

P-6623, Textile World
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

DEVELOPMENT MAN

Surgical dressings manufacturing plant has an opening for a young man to organize and direct product and package development activities.

This will involve knowledge of market requirements and the ability to come up with ideas for new products and new applications and improvements of existing ones.

Training in chemistry and some knowledge of adhesives desirable. Actual laboratory and pilot work will be involved. A leaning towards machine development, or at least an understanding of mechanical equipment production problems, would be useful.

This position should offer a challenge to a young man with five to ten years actual experience in development of surgical dressings to head up and grow with this department.

Send complete resume, including salary requirements, to

P6708 Textile World
645 N. Michigan Ave., Chicago 11, Ill.

Position Available

BRUSHING and NAPPING

Technical supervisor for newly organized brushing and napping department knitted goods. Excellent opportunity. Apply

P6724 Textile World
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

RESIDENT MANAGER WANTED

Southern N. E. weave plant with 100 Plain and Jacquard Looms. Require aggressive administrator with textile experience to take charge of plant. Salary in low five figure range. Inquire

P-6674, Textile World
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

COMMISSION SPINNING WANTED

Woolen system, any size, any fiber, 180 miles from New York. Write to:

WW-6280—Textile World
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

CIRCLE 400 ON READER SERVICE CARD

LIQUIDATION SALE of the Former

Arco Mills, Inc. – New Bedford, Mass.

56—Draper XD Looms, 57½" bet. swords, with "Unifil"—Age 1953
72—Draper XD Looms, 54½" bet. swords, 44 looms with "Unifil"—Age 1951
120—Draper Model K Looms, 20 harness dobby, motor
2—Abbott Hi-Speed Quillers, 1—120 spdls., 1—100 spdls.
1—Johnson 7-can Slasher, 30x60", dble size, 13 beam creel
2—Uster Tying-in Machines, portable, with frames
2—Terrell Model L Bobbin Stripping Machines
1—Cocker Hi-Speed Warper 54¼" wide, magazine cone creel, 4 lb. pkg.
5—Cloth Inspection Machines, 54" wide
1—Package Steam Boiler

Loom Parts, Beams, Harness Frames, Bobbins, Air Compressors, Vises, Trucks, Heddles, Drop Wires, Water Coolers and Air Compressors

ALLIANCE offers the following textile machinery at other locations:

46—Warner-Swasey "Sulzer" Shuttleless Looms, 80", 2 harness & 25 harness, Age 1950-2
50—C & K S6 Looms, 58" swords, 2x1 box, Age 1950-1
28—C & K S6 Looms, 58" swords, 15-4x1 box, 13-2x1 box, Age 1948-51
12—C & K W3 Looms, 82" swords, convert.—#14,300's
12—C & K W3 Looms, 82" swords, convertible, L.O. #14930
10—C & K W3 Looms, 64" swords, convertible, L.O. #14292
40—C & K W3 Looms, 72" swords, convertible, Age 1948
13—C & K Jacquard Rug Looms, 49" swords, 204 hooks
120—Draper XD Looms, 64"—dobby with Unifil, Age 1951
60—Draper XD Looms, 60"—dobby with Unifil, Age 1947
4—Johnson 7 can Slashers, 74"-60" wide, complete
1—BC Tying-In Machine, Model LC, manual
14—Reiner Hi-Speed Flat Knitters, 120" wide, motor
2—Laxenby Model T-Jr. Cop Winders, 30 spdls.
1—Abbott Paper Cone Winder, Model #65, 100 spdls., Age 1948
1—Fletcher D.D. Uptwister, 40 spdls.—1953
1—Fletcher Stainless 30" Extractor, Auto. timer
1—Becco Continuous S.S. Bleach Range, J-Box, 2000 yd/hr. Saturator—1954
1—Morrison Williams Range 60", 15 ton, pad, 2—Williams Units, 3—washers, Vac. Extractor, MG Set—1948
1—Verduin Hyd. Padder, 60", 15 ton, 20" dia. rubber rolls
1—Morrison Micro-Set Pad, 60", 8 ton, 14" dia. rubber rolls

LIQUIDATION SALE of the Former
Roger James Woolen Corp., Philadelphia, Pa.

24—Crompton & Knowles W3 Looms, 82" swords, 25 harness, motor
24—Crompton & Knowles W2 Looms, 82" swords, 25 harness, motor
2—Titan Warp Tying-In Machines, w/frames—1950
528 Ends—McBride Portable Cone or Tube Creels
100,000—8¾" bobbins 8—Pinless Warpers—92"
264—Fluorescent lights 2000—Harness Frames
12—C & K Non-Auto Looms, 82" Intermediate Head

Agent in Phila.—N. W. Steele, Adam & Leiper Sts., Phila., Pa., Tele. Pioneer 3-1603

1—P & S Loop Dryer, 60' long, 126" sticks—1948
1—Rodney Hunt Stainless Encl. 16' Dye Box
1—Burlington Stainless Pressure Beam Dye Machine— 1959
2—Smith Drum Stainless Package Dye Units, 500 lb.—1948
1—Obermeir Stainless Package Dye Unit, 300 lbs.—1 carrier
1—P & W Hi-Speed Davidson Shear, 3 blades, 66½"—1947
3—Werner Stainless Encl. 70" dye Jiggs, no motors
1—Meadows Hyd. Embossing Calender, 72", 25 ton—1949
1—Rodney Hunt Stainless 40" dye unit, pneu. padder—1952
1—Rodney Hunt Stainless 2 comp't Washer, 80" wide
1—Smith Drum Stainless Sample Paddle Dye—1955
14—Stainless Steel Dry Cans, 74" wide, 30" dia.

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37 NORTH 3RD STREET • ALLENTOWN, PENNSYLVANIA • HEMLOCK 4-4897-8

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FOR SALE

1—Haskell & Dawes 6 spindle, Flyer Twister, 10 x 5 bobbins.
10—Haskell & Dawes 12 spindle, Flyer Twister, 7 x 5 bobbins.
4—2 spindle Formers with back stands, 10 x 8 bobbins.
4—Haskell & Dawes 2 spindle Rope Layers, 3 strands.
8—5 spindle #45 Universal Cone or Tube Winders, 10" traverse.
6—Single spindle #6-C Universal Winders, 8" cams.
15—Chelmsford Ballers 2-6-12-16-20 spindles, ¼, ½ & 1 lb. balls; also 5 & 10 lb. balls.

INTERSTATE TEXTILE EQUIPMENT CO., INC.

P.O. Box 3371 CHARLOTTE 3, N. C. Tel. 375-7702 • EMPIRE STATE BLDG., New York 1, N. Y. PEnn. 6-0451

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WANTED

22—C. & K.—W3—92"

LOOMS

Send Complete Specifications
C.&K. orig. order no. and price

To

JAMES W. COX
WELLMAN OPERATING CORP.
111 West 40th St. New York 18, N. Y.

CIRCLE 405 ON READER SERVICE CARD

WANTED TO BUY

2-6 Carpet looms for BRUSSELS or WILTON carpets with all the equipment. (Creels, warpers etc.)
4-8 C & K, C-4 loom, 72", four by one.

W-6624, Textile World,
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

CIRCLE 403 ON READER SERVICE CARD

Buy and Sell
Used Textile Machinery
of any description

JACOB SALT, 421 7th Ave., N. Y. C.
or P. O. Box 1535 Paterson, N. J.
NY Phone CHickering 4-8556

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Watch—
the *Searchlight Section*
for
Equipment Opportunities

10 Atwood 10-B 2 lb. DOUBLERS

100 Spindles Each, 7" Gauge, 8" Trav. Bottle Wind — Like New Condition

3—SIPP-EASTWOOD 101" MAG. DY— GOOD COND. WARPERS

• 4 SPEED MOTORS HORIZ. 8 YD. SILK TYPE.

1958 MODEL
ATWOOD—80 SPIND.
TWISTER CONER
OPERATES 16M R.P.MS
WILL PRODUCE UP TO 8 LB. CONE
LIKE NEW COND.

LOOMS

19—1953—W3AC—2x1 84"—CAM-TYPE
32—DRAPER—44" DOBBY XD'S
170—56" 2x1—S6 LOOMS

10. U. S. REDRAWS . . .

52 SP. EACH—HI SPEED—SPINDLELESS
Hen. Tensions—1 lb. Cap.

350—Textile Flat Braiders, 13 to 144 Carriers
100—Textile Tubular Braiders, 16 to 64 Carriers
24—Striper Braiders—10/11/10—24/12/12—6/19/6
8—Fletcher 15'-8" SFRM Binding Looms, 84 space
16—Fletcher 13' Tape Looms
2—Fletcher Victory Looms 16'—66 space
1—24 space Fletcher Webbing Loom, New Batten for Seat Belts
6—C & K Webbing Looms—24 space
1—Fletcher H.D. Webbing Loom 1
4—Narrow Fabric Finishing Machines
1—30" x 60" 7 Can Drying Machine. U. S. Vari Drive
1—Arnold Single Sided Rubber Covering Machine. 64 Spindles.
1—24 Spindle Gloddie Quiller
10—C & K H.D. Webbing Looms 1948. 12-18-24 space—Serial 17277
2—100 ARM Bfunlay Skein Dye Machines

100 LB.— SMITH DRUM PACKAGE DYE MACHINE

80 Pkg.—⅝ Tube—Complete with Carriers and Brown Instruments.

20 DYE BECKS

Stainless Steel—Open & Closed
From 2 Ft. to 16 Ft. Wide
From 32 to 60" Deep

24 REBUILT MODEL 50 CONERS

GESSNER — 80" NAPPER

18 ROLLS — DOUBLE ACTING

CALENDERS — 1 - V. V. 20 TON, 1 - V. V. 7½ TON

1954 Continuous BLEACHING

1500 Yds Per Hour Capacity
BECCO J-BOX **RANGE**

10-NEW-12-oz ATWOOD—UTILITY TWISTERS

JOHNSON ST. STEEL 7 CAN SLASHER

72" FACE X 30" DIAM. CANS—COMPLETE

1—R & L 6'-60" Enclosed S.S. Dye Beck.
1—Birch Bros. 70" Vac. Extractor with Ads Slot & Rolling Nash L-4 Pump.
Bramwell Feeder & Blender.
1—K-W 400 1954 Totally Enclosed Paddle Dye Machine.
1—S.D. Totally S.S. 300 lb. Rotary. 12 Comp.
1—Venango S.S. Rotary 100 lb 4 comp.

COCKER—80" DOUBLE SIZE BOX

60 Gal. Cap. Pneumatic—Stainless & Rubber Rolls

4 - H & B SPINNERS

200 SP. EA. - 4½" GAUGE - 3¼ RING, 9¼ TRAV.
PNEUMAFIL

2 - U. S. TEXTILE DOUBLERS

JUMBO TYPE — 5 LB. - 8 LB. CAP.
1 - 48 SPINDLE & 1 - 24 SPINDLE — 1958 . . 9" GA. . . 9" TRAVERSE . . 7" RING . . SPOOLS & CREEL . . ALL HEANIUM GUIDES & K. O.

V. V. 1951 - 70" PALMER

50" X - 2 TERRY CLOTH LOOM

1957 MODEL - 20 HARNESS DOBBY

SMITH DRUM SKEIN MACHINES

CASCADE TYPE — 1951 MODEL
2 - 3 ARM MACHINES — 2-5 ARM MACHINES — 1 - 7 ARM

Wm. Rabinowitz & Sons

TEXTILE MACHINERY, BOBBINS & SUPPLIES
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EXCLUSIVE LIQUIDATION - MACHINERY AND EQUIPMENT

FREEHOLD, NEW JERSEY PLANT OF A. & M. KARAGHEUSIAN, INC.

PARTIAL LISTING — COMPLETE BROCHURE ON REQUEST

PREPARATORY

1—Stokes S.S. Soaking Unit, 500 lb. jacketed Impregnator Tank, jacketed Liquor Tank with Agitator and jacketed Mixing Tank with Agitator, compressor for vacuum or pressure, Control Panel for cycle-temperature, etc.
1—Beamer Slasher Unit, takes 108" beam, heavy duty Beamer, starch box with S.S. rolls, 21 S.S. Cans 130" face x 23" diameter vertical stacks (some Teflon coated), Mixing Tanks with controls and Agitators, steel Creel holding 28 section beams.
1—Kearny Hydrolit Yarn Conditioner model AY.
1—Economy downstroke Waste Baler model #454.
4—Lazenby Cop Winders.
2—Single spindle Yarn Stripping Machines.
2—Skein Winders—30 spindle units.
1—Bit Winder—8 spindles.
1—P.S. Universal Twister, 120 spindles, 6" gauge.
10—Axminster Setting Frames 36".
3—Axminster Setting Frames 54".
5—Shawmut Axminster Threading Frames 36".
2—Shawmut Axminster Threading Frames 54".

WEAVING

1—Lansdowne Wilton Jacquard Loom 12/4 (108") 252 pitch.
1—Lansdowne Wilton Jacquard Loom 12/4 (108") 180 pitch.
1—Tioga Wilton Jacquard Loom 12/4 (108") 252 pitch.
5—Lansdowne Wilton Jacquard Looms 16/4 (12') 252 pitch.
1—Tioga Wilton Jacquard Loom 16/4 (12') 252 pitch.
1—Lansdowne Wilton Jacquard Loom 20/4 (15') 252 pitch.
7—Crompton & Knowles ¾ (27") Axminster Looms, 7 pitch.
13—Crompton & Knowles, 12/4 (108") Axminster Looms, 7 pitch.
5—Crompton & Knowles 15/4 (12') Axminster Looms, 7 pitch.
1—Crompton & Knowles 12/4 (9') Velvet Loom.
1—Jones 16/4 (12') Velvet Loom.
3—Jones 20/4 (15') Velvet Looms.

DRYING

1—Proctor 1954 model float type Carpet Dryer and Latex Unit for 15' wide material. Steel insulated Rock Wool Housing with 7 sections, each Unit (6'0" long each) consisting of 6 Drying Units and 1 Cooling Unit. Maxom Gas Pre-mix Heating Units designed up to 400° F., air operating Temperature Recorders, 14 motor driven Circulating Fans, 3 motor driven Exhaust Fans, motor driven Drum with PIV variable speed units and speed reducers, S.S. Tank with S.S. applicator roll, doctor blade and adjustable S.S. pan, 2 S.S. lined Mixing Tanks, roll type roll-up.
1—Proctor & Schwartz ceiling type Dryer and Back Sizer for 12' wide carpet—unit approximately 100' long; first section 11 belt driven Circulating Fans; second section 5 motorized Circulating Fans and Exhaust Fan—steel Tank for sizing with S.S. applicator roll and back brush, 4 Mixing and Starch Tanks (2 S.S.) with Agitators, Railway Sewing Machine motorized.

SHEARING

1—Bruckner 20/4 (15') double cutter Shear.
1—Curtis & Marble 16/4 (12') double cutter Shear.
1—Curtis & Marble 12/4 (9') double cutter Shear.
1—Curtis & Marble 4/4 (36") double cutter Shear.
1—Curtis & Marble 4/44 (36") single cutter Shear.

BURLING

8—14' Burling Tables.
5—16/4 (12') Burling Tables.
8—20/4 (15') Burling Tables.

INSPECTION

1—16/4 (12') Inspection Table.
2—24/4 (18') Inspection Tables.

MISCELLANEOUS

3—Kaumagraph Print Machines—3 Carpet Baling Machines—2 Union Special Sewing Machines—1 Lewis Sewing Machine—1 Singer Serging Machine—1 Singer #145-W-103 Sewing Machine—Rack spool Trucks—Trumeter Counters—Dollies 4 and 6 wheel—Electric Fans 12", 16" and 20"—Hoists, hand operated, ½ ton and 1 ton—Hoists, electric operated, ¼ ton up to 1¼ ton—metal storage racks—Scales—Axminster tube frame trucks and spool trucks—Flat trucks—Box trucks.

OFFICE EQUIPMENT

Desks, Chairs, Tables, Typewriters, Clothes Lockers.

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Grinders — Welding Equipment — Saws — Lathes—Drills—Tools, etc.
Machinery individually motorized and set up on floor as operated.
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1—Arnold Rubber Covering Machine
11—Unirails—Model 501
8—U. S. HDless Pkg. Twisters
70—Foster 75A Winders
6—Balling Machines

S.S.Skein Dyers—1-12, 1-10, 1-7 Arm
4—Tubers w/Yardage Clocks
10—Atwood & Sipp Redraws
2—Sauer 19" Embroidery Machines
4—H&W Steam Boxes
1—Haskell & Dawes Circular Twisters

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3—Barber Coleman Knotting Machines 56" LL
2—Terrell L Strippers—hoists—conveyors
4—Hacoba Narrow Fabric Quillers
1—Whitin F Quiller for Braider Bobbins
24—W2 Convertible 82" Worsted Looms
25—Walter 110 Volt Humidifiers
13—N.E. #3 Braiders—16 carrier
400—Fluorescent Fixtures metal—48"
200—Pr Draper Beam Flanges 22" (38T 8P
300—AMCO #5 Atomizers with controls
250—Veeder Root 3-shift reset Pick Counters
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72—6-6 36" B/S dobby, C&K looms
20—XK 44" TAFFETA motion, Draper looms
2—Warpers & 1000 end creels, Reiner & Sipp
1—Magnesium Sipp Warper, 600 end creel
2—Johnson stashers, 7 can, Teflon
4—Whitin 1949 Lap Winders
12—Deliveries Whitin bi-coil drawing, 1949
2—Whitin Speed-o-matic Quillers, 1956
2—Abbott Quillers, 120 spindles, pinboard
3—Abbott Radial Quillers, pinboard
1—Universal creel, 350 ends
1—Sipp-Eastwood creel 700 ends
2—Tensionless Batchers, DC
2—48" Dye Jiggs, stainless steel
6—S/C warp tying mach., LC LS LL K
2—Haskell Dawes S Formers for rope, 1956
1—Edmunds high speed layer, 5/8" rope
1—Cloth Trimmer, 72" with Kaumagraph
10—S.S. tanks + kettles, up to 1000 gal, all types

6—S.S. Hook Reeds, 8-15 dent
10—Reeves transmissions, size 00 to #5
200—Parks Cramer humidifier heads
750—NEW hank clocks & used pick clocks
500M—Quills, #3, #5, #6 butt, all lengths
12—Platform scales
2000M—Heddles, 10-16". Also selvage heddles
15M—Single & double rod harness frames
5000M—Drop Wires, all types
6—Bobbin strippers, K & L, also roving

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- 1—Morrison Stainless Steel Peroxide Saturator
- 1—Morrison S.S. J Box

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- 1—Rodney Hunt S.S. Tensitrol Rope Washer
- 1—Weisner-Rapp J Box, 20' high

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1 Aluminum Peroxide Tank, 5000 gals.
24 Allen Kiers
4 Perkins Bin Pilers
2 Kemp Singer Units

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1 Butterworth Mercerizing Unit consisting of
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- 3—Section Scott Wash and Recovery Unit
- 2—Burdett Singers
- 1—3 roll Padder
- 1—Recuperating Unit
- 1—Variable Voltage Reliance Motor Generator Set

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34 S.S. Dry Cans 90 x 30" dia.
1 Proctor & Schwartz Roller Dryer 24'
1 Butterworth 90' Enclosed High Speed Tenter Frame, Proctor & Schwartz housing
1 Butterworth 80' Enclosed High Speed Tenter Frame and housing
1 Textile 70' Enclosed High Speed Tenter Frame and housing
1 McKiernan-Terry Combination Schreiner, Friction and Rolling Calendar, 50 ton
1 Perkins 3 roll 100 ton Hydraulic Calendar
2 Perkins 5 roll 50 ton Calendars
1 Proctor & Schwartz Gas Fired Loop Curer
1 Morrison Rubber Belt Compressive Shrinkage Range, Reliance drive
1 V.V. Palmer Tenter Unit 40'
1 V.V. roll Calendar 60"
2 V.V. Heavy Duty Tenter Frames 60 x 66"
1 Verduin 2 roll Padder 50"
61 S.S. Dry Cans 47", 30 lbs. pressure
44 S.S. Dry Cans 142 x 23" dia.
1 Cocker Indigo Dye Range, 1948

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1 3 roll Padder, air set, motor
1 Continuous Dye Range consisting of
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- 1—Morrison 2 roll Padder
- 1—Rodney Hunt 6' Tensitrol Washer
- 1—3 compartment Open Width Wash Unit

1 S.S. 4 compartment Open Width Washer
1 Burlington S.S. Beam Dyeing Unit
8 Textile & Werner S.S. Dye Jiggs 50" to 70"
13 S.S. Dye Boxes

PRINTING AND AGEING

1 Proctor & Schwartz Loop Ager, 1954
1 S.S. Acid Ager 24'
1 Rice, Barton & Fales 50" 10 color Print Machine
1 Rice, Barton & Fales 8 color Super Precision Print Machine 50"
2 Rice, Barton & Fales 8 color Print Machine 44"
1 Rice, Barton & Fales 6 color Print Machine 44"
5 Rice, Barton & Fales and Textile 8 color Print Machines 50" to 66"
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1 R. B. & F. Mandrel Jack
3000 Engraved Copper Rollers

OTHER MODERN TEXTILE MACHINERY

91 Draper XD Looms, 54" reed, Diehl and motor, 1947-51
36 Whitin F2 Spinning Frames, 3½" ga. super draft
62 Saco-Lowell Spinning Frames 3¼" ga. Casablanca, 7½ hp.
12 Atwood Redraws, 68 spindles, 1950
56 Universal #10 Uptwisters, 184 spdls. 2 lbs. headless package, 1950
3 Sipp-Eastwood Warpers and Creels, 1949
3 Abbott Quillers, 1955
74 C. & K. W3 AC Looms 82"
234 C. & K. Big 6 S6 Looms 56" b.s. 1948

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1—90′ x 60″ Enclosed Tenter Range.
36—All Stainless Steel Dye Jiggs, 60″ - 78″ widths, enclosed and open.
42—All Stainless Steel Dye Becks, 2′ - 20′ widths, enclosed and open.
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5—Semi Decators, 60″ - 72″ widths, double pump.
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8—Klauder Weldon Skein Dyeing Machines.
4—Palmers, 66″ width.
1—Compressive Shrinking Range, 57″.
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16—Examining Machines, 60″ - 75″ widths.
6—High Speed Tubers, 60″ - 70″ widths.
1—80″ Double Acting Napper, ball bearing.
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1 —Bramwell 60″ Feeder—weigh pans
1 —Platt 40″ Feeder—weigh pans
2 —S-L 45″ 3 Beater, Single Process Pickers
32 —Whitin 45″ Cards, Abington stripping, 15x42 coilers
47 —Whitin 40″ Cards, Abington stripping, 12x36 coilers
1 —Set (3) Holdsworth Gills—2-3-4 heads
26 —Whitin Spin. 4″ ga., 168 spindle, tape, M.D.
4 —Whitin Model B.B. Novelty Twister 5″ ga., 4″ ring, 148 spin., M.D.
4 —Whitin Model B.B. Twisters, 5″ ga., 3¾″ ring, 136 spin., M.D.
2 —U.S. Textile D.D. Uptwisters, 160 spin., M.D. (face drive)
2 —U.S. Textile Redraws, spindless hangers, 72 spin., M.D.
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20 —Universal #50 Winders, pineapple, emulsion, M.D.
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5M —Metal Steaming Spools, 3½″ dia. heads x 3⅞″ tr.
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21 WHITIN Ply Twisting Machine Model T-3-304, M304 Marquette, Frictionless Spindles, 25 HP, M/D
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1 WHITIN Cord Twisting Machine, Model T-2B-296, 296 Friction Spindles, 25 HP, M/D
3 WHITIN Ply Twisting Machine, Model T2A-280, 280 Spindles, 25 HP, M/D
4 WHITIN Ply Twisting Machine, Model T3-280, 280 Spindles, 25 HP, M/D

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4 WHITIN Tube Back Winder, Model TO2A, Vertical Type Marquette, Frictionless Spindles, 15 HP, M/D
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3 72" CLARAGE Fan Blower, 75 HP, M/D
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1—D&F 40" Mixing Picker with Feeder, blower Motor & Drive.
1—D&F 48" Mixing Picker Shedder—12 Bar—BB—1948.
1—Proctor & Schwartz 60" Volumetric Feed with Garnett Section, to make webs for non-woven fabrics.
1—Proctor & Schwartz Willow late type with picker head.
1—Proctor & Schwartz 48" Super Picker 1952.
1—Sprout Waldron Burr remover—1954 with motor.
1—Schofield 42" Rag Picker with Workers—Steel Clad Cylinder and extended apron.
1—D&F 3 Cyl. Woolen Card 48" x 60 Diam. All irons, Peralta, BB Feed, and Whitin Tape Condenser.
1—D&F 4 Cyl. All iron woolen card 60" x 60" with peralta and and tape condensor.
2—Bramwell 60" Card Feeds with Bottom Apron and center-latch weigh pan.
1—Peralta 72" wide.
1—Proctor & Schwartz 60" Worsted Card Feed.
1—60" Barrell Card Grinder with floor stand.
1—48" Grinding Floor Stand with Clothing Drum.
1—Sargent Automatic Bagging machine with gear motor.
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24—Crompton Knowles W3 Automatic Convertible 82" Looms. 25 Harness, High Cloth Roll Take-up, EWSM—one-half looms are automatic let-off and blance are friction let-off. Shuttles 18" x 2⅛". In excellent condition.
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1—Whitin-Schweiter 1954 Hopper loader.
2—D&F—96" Pinless dressing reels with Hackstand, and Beamer.
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1—Hunter 24" Stainless totally enclosed Dyekettle Herringbone Reel, with Dye Cycle Control, motor driven.
4—Riggs & Lombard and Rodney-Hunt Stainless Dye kettles 6 and 7 ft. widths.
1—Tolhurst 48" Centrifugal SS Basket, Timer Brake, self Mounted motor.
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1—Birch Bros. 72" Scutcher with folder, motor driven.
1—David Gessner 72" x 36" Semi Decater Serial No. STM 291 complete with motors Blanket, excellent.
1—P&W Model A, 2 Blade 66" Shear
1—P&W 72" Cropping Shear—Saw tooth revolver.
2—James Hunter Sections from continuous Washer with 66" Rubber Squeeze Rolls pneumatic pressure. Year 1950.
1—James Hunter 90" Single Section Uniflow dryer, Reeves drive, fin type heating coils, guiders, over-feed, etc.
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1—Davis & Furber 24 Roll Double Acting Napper 80" Wide.
1—Mannayunk Open Roll Winding & Measuring Machine.
100—Moosberg 30" loom beam flanges—82" & 92" Loom Beams.
1—Complete Parks & Woolson Burling Range with Dixie Shears.
2—James Hunter 2 Cylinder Garnetts 20", 20" with 30" doffer, Year 1957—Motor driven, variable drives runout aprons, etc.

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1—6' and 3—4'x9'x30" Stainless Steel Dye Becks with set of Rigs; Lombard Pneumatic Squeeze Rolls, 7½" diameter, stainless steel bottom roll and rubber top roll.
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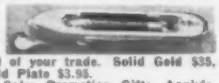

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Cottage Steamer—5′x12′.
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2—VV—60″ Tensionless Tubers
1—Progressive 74″ Examiner
10—SS dye becks—8′—15′
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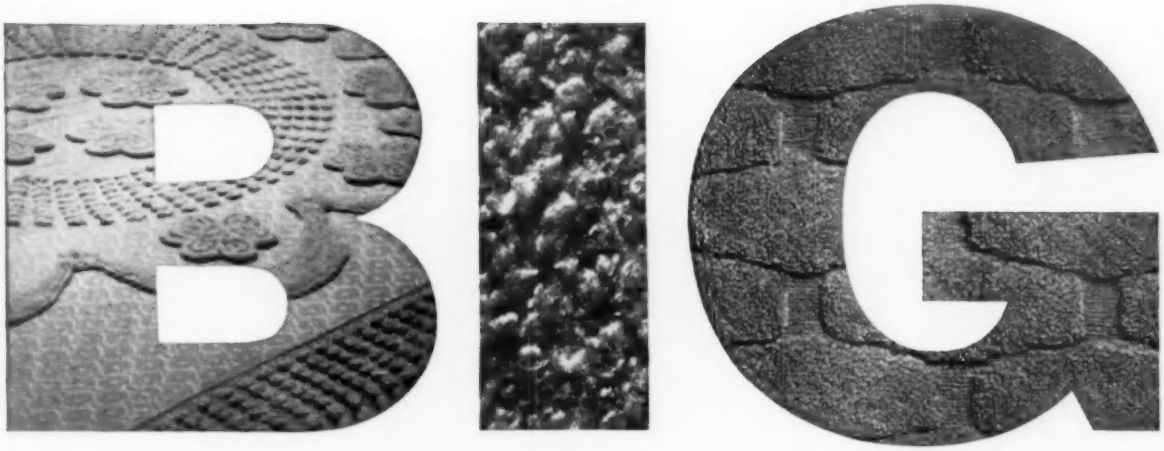

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